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MARCH 2016

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March 2016 CONTENTS

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15 years of iTunes: A look at Apple's media app and its influence on an industry **100**

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PUBLICATION INFORMATION

The complete guide to using emoji on your Mac, iPhone, and iPad

BY CHRISTOPHER PHIN

What the heck is emoji anyway? They're just little symbols you can use in text in addition to your usual alphabet or pictographic characters. Things like 😄 and 👍 and ❤️.

SO, LIKE, SMILEYS? ;-)

Yeah, a bit. Smileys like the ones that are actually called emoticons. There are many more emoji, so they have a richer vocabulary. Plus, they're prettier, and rather than taking up seven characters to write this ASCII rose @}-,-`- you can just use one, 🌹, which is kinda handy on Twitter.

BUT WHEN I TYPE :-D IN SOME APPS, IT TURNS INTO 😄 ANYWAY, SO...?

True, some systems will convert old-fashioned emoticons such as :'(into little colorful icons instead. Sometimes they will literally be taking those few simple characters and replacing them with an emoji equivalent, sometimes they'll swap them for a little bitmap character, and sometimes the underlying series of simple characters is left there but the app will show you a colorful icon instead when it displays the text. For example, I remember this happening with iChat; if I wrote "I'll be there (probably around 8)" then what would get displayed was "I'll be there (probably around 😎" since it would swap out the **8)** for the 😎 character on the fly!

YOU'VE LOST ME.

Yeah, that got a bit technical, didn't it? 😄 Basically, emoji are just sweet little symbols you can use to add nuance, context, and fun to text—or indeed to replace text altogether. Whee! 🎉

OKAY, SO HOW DO I USE THEM ON MY MAC?

Anywhere you can type text, press Control-Command-Space and a
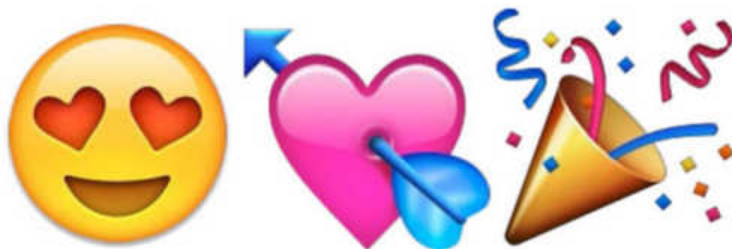
character palette will show up, which allows you to browse and search—just start typing—through the emoji. Click one or highlight it with arrow keys and hit Return. On older systems, you'll have to use the Special Characters palette from the Edit menu (or Command-Option-T), and you might have to enable emoji by clicking the cog at the top left and customizing the list. You need at least OS X 10.7 to view and type emoji. 😊

ANYWHERE I CAN TYPE TEXT, EH?

Well, nearly anywhere. You can use emoji in naming files and folders, though you're entering a world of pain when you share them. And some apps, such as those in the Office 2011 suite, won't support this character palette. But yeah, it will be at least technically possible in most places you can type text, smarty-pants. 😜

AND ON iOS?

Go to Settings ➜ General ➜ Keyboards ➜ Keyboards and enable the Emoji keyboard. Now, wherever you can type text, tap the smiley at the bottom left of the keyboard to switch to emoji. (On older systems, tap the globe icon to toggle between keyboards; the emoji keyboard is just

treated like it was any other language keyboard.) You can view emoji on iOS 4, but it wasn't until iOS 5 that we got the option of typing them using an emoji keyboard outside of Japan.

JAPAN?

Yeah, emoji are originally Japanese, and although they're now being more widely adopted—indeed, since 2010, the global Unicode Consortium has worked to integrate a subset into the Unicode standard, and added many more since to make the system more international—to western eyes there's still a slightly peculiar feel to the full emoji set. But hey, it's quite nice that after years of imposing our culture on the world, we're put in the position of finding ourselves a bit adrift in Japanese culture through the world of emoji!
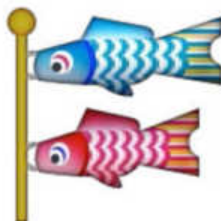
YEAH, CUTE, BUT WHAT ON EARTH DOES 🎏 MEAN, FOR EXAMPLE? OR 📛?

Well the first is koinobori, little streamers shaped like carp used to celebrate Children's Day in Japan, and the latter is a tulip-shaped name badge used in kindergartens. In Japan.

SEE?

WAIT, WHAT?

I know; if you're not Japanese, you might have little call to use these particular ones—at least, to use them to designate their original meanings. But this is language, man, and language is gloriously malleable. So, the legend of the three wise monkeys (see no evil, hear no evil, speak no evil) is originally Japanese, and you have emoji for 🙈, 🙉, and 🙊, but I sometimes use 🙈 to signify a kind of forehead-slapping "D'oh!", and 🙊 to signify a hand clapped to the mouth—"I can't believe I said that!"

AND PEOPLE UNDERSTAND THAT, DO THEY?

Maybe, maybe not. But it's fun and playful, and even written language is susceptible to misinterpretation. Indeed, emoji can help add color and nuance to bare sentences which might help obviate this.

OKAY, LET ME TRY: "YOU'RE SUCH A NERD! 🤓 😘" HOW'D I DO?

Not bad, and the kiss suggests you're just being playful rather than actually insulting, which I hope is

FREQUENTLY USED

THE NEWEST BATCH of emoji was added in iOS 9.1, including the long-awaited taco, unicorn, and Live Long and Prosper emoji.
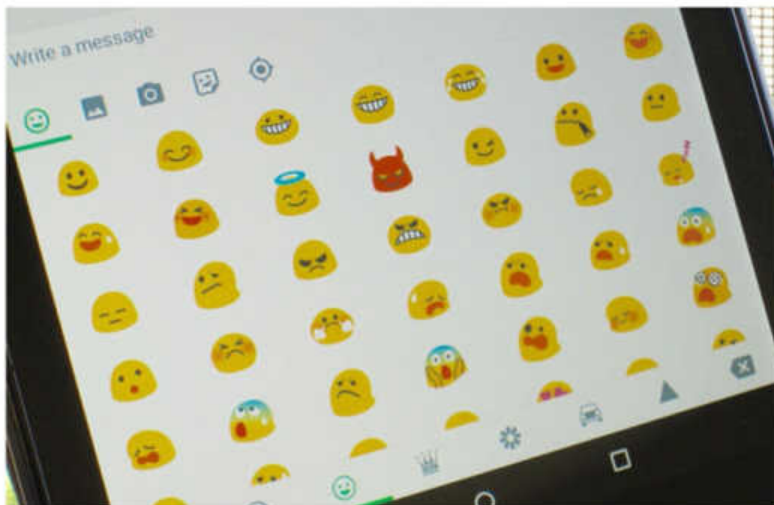
true, since apart from anything else *you* are an entirely fictional construct built by my own consciousness, and I would hope I'm not so self-hating as to actually insult myself in the middle of writing an innocuous guide to emoji for *Macworld*.

However! The 😈 emoji is a brand-new one, introduced first with iOS 9.1, and so not everyone will be able to see it; for example, some people reading this in a browser on a desktop won't see it, even. Indeed, some people reading this won't see any emoji in this piece at all, since their system will be too old to display them; they'll see error characters instead.

THAT'S CRAZY. SO IF I USE AN EMOJI IN A TEXT MESSAGE OR ON TWITTER, THERE'S NO GUARANTEE PEOPLE WILL SEE IT?

It's complicated. In general, most modern computers, smartphones, and tablets will at least display some emoji, though unless you're as geeky about it as I am and can identify the characters that have been around for a long time and are so likely to be more widely supported, no, there usually isn't a guarantee that your emoji will be seen by other people. There are exceptions: Twitter and Facebook, for example, have systems in place so that emoji viewed through their official apps or on their

websites will display—using either the emoji native to the kind of device they're being viewed on or by replacing them on-the-fly with their own versions of the emoji character.

LOST AGAIN. "THEIR OWN VERSIONS OF THE EMOJI CHARACTER"?

Yes, even a simple winking face emoji will look different on each platform—although the Unicode Consortium now controls the list of emoji, all that list really is is a text description of each one; it's up to Google to decide how to actually draw up that description on Android and Chrome OS, up to Apple how to do it for OS X and iOS, and so on. (And in this context, Facebook, for example, is a platform in its own right.)

THAT SEEMS FAIR ENOUGH. A WINKY FACE IS A WINKY FACE IS A WINKY FACE, RIGHT? 😉

Right. But sometimes the representation of an emoji veers in completely weird and unforeseeable directions. For example, our own Susie Ochs uses 💁 when chatting to suggest a saucy hair-flip, but technically that character is called "information desk person," and its equivalent on Android is weird, and looks nothing like a woman flicking her hair, which means the meaning can get totally lost.

One more wrinkle. With recent updates, some emoji support different versions to allow for a little welcome racial diversity. So, by default, 😉 shows up on modern Apple systems as a race-neutral golden yellow Lego-type person, but you can opt to switch it to 😉, 😉, 😉, 😉, or 😉 by long-pressing on it. This is handled at a technical level by the computer actually typing 😉 plus a second character that defines the color, and on systems that support the skin color variants they just get understood as a single character—but on those that don't, you might see the emoji for a man plus a little colored square.

THIS ALL SEEMS MORE TROUBLE THAN IT'S WORTH; I GIVE UP! ¯_(ツ)_/¯

Kudos on the ¯_(ツ)_/¯, by the way. And yeah, if you decide emoji are just too risky to use if you don't know how or even if they'll appear on other

EMOJI GOT MORE diverse in iOS 8.3 and OS X 10.10.3.

systems, fair enough. But they're also sweet, playful, and semantically useful, so they're worth experimenting with. And ¯_(ツ)_/¯ reminds me of one last tip: if you regularly use particular emoji, especially on the Mac, selecting it with the character palette might slow you down a bit when you're typing, so you can use the text expander system built into OS X to replace a sequence of characters of your choice—for example, "//kiss" could become 😘. This is also how I can easily type ¯_(ツ)_/¯ (my trigger is "//shrug") as well as ⌘, Nº, ½, and more. There's a quick guide (chrisphin.com/blog/text-expanders) on my own blog. 👋 ■

I was one of the **1** in **5** Children in America who STRUGGLE WITH HUNGER join me and help put an End to childhood hunger.

Viola Davis

HUNGER IS
ALL OF US

HELP UNDO CHILDHOOD HUNGER. GO TO HUNGERIS.ORG

THE
SAFEWAY
FOUNDATION

The *Hunger Is* campaign is a collaboration between The Safeway Foundation and the Entertainment Industry Foundation to raise awareness and improve the health of hungry children.

EIF

Apple fanboys and fangirls, behold!

Thanks to our friends at MobileMania.cz, we got a special look inside the new Apple Museum that just opened in Prague.

BY OSCAR RAYMUNDO

PHOTOS COURTESTY OF: MOBILEMANIA.CZ

Blast from Apple's past

From the outside, the Apple Museum could easily be mistaken for an Apple Store from the '90s.
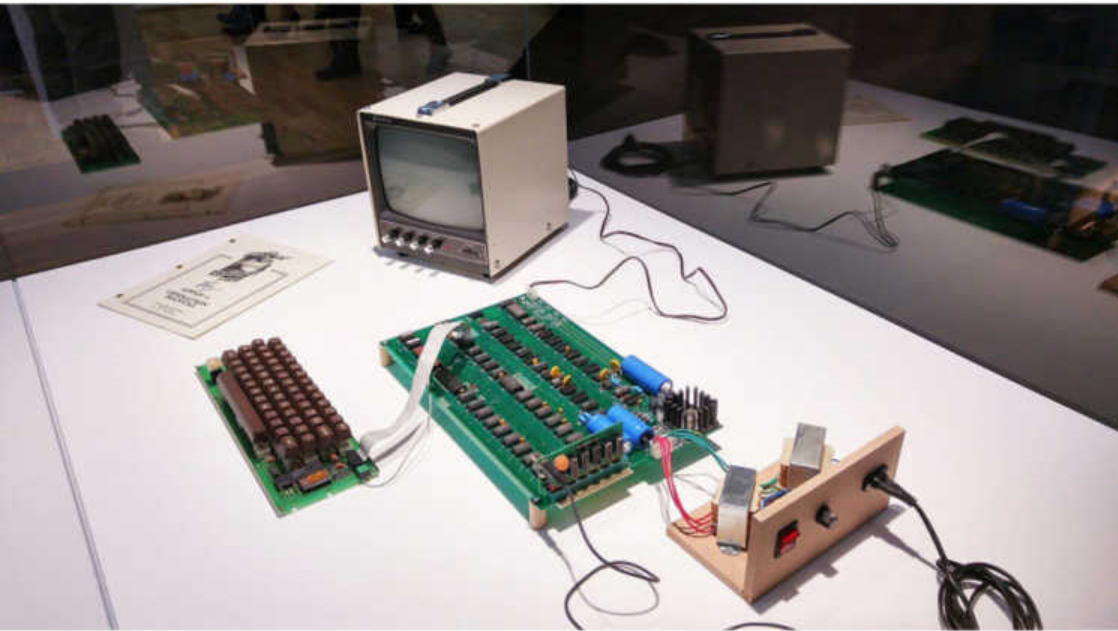
Apple I

The museum's first room is dedicated to the first computer Steve Jobs and Steve Wozniak ever built back in 1976. The Apple I exhibit includes an original operation manual signed by Woz.

Look but don't touch

Reminds us of the *Macworld* storage room (go.macworld.com/mwvintagemacs).
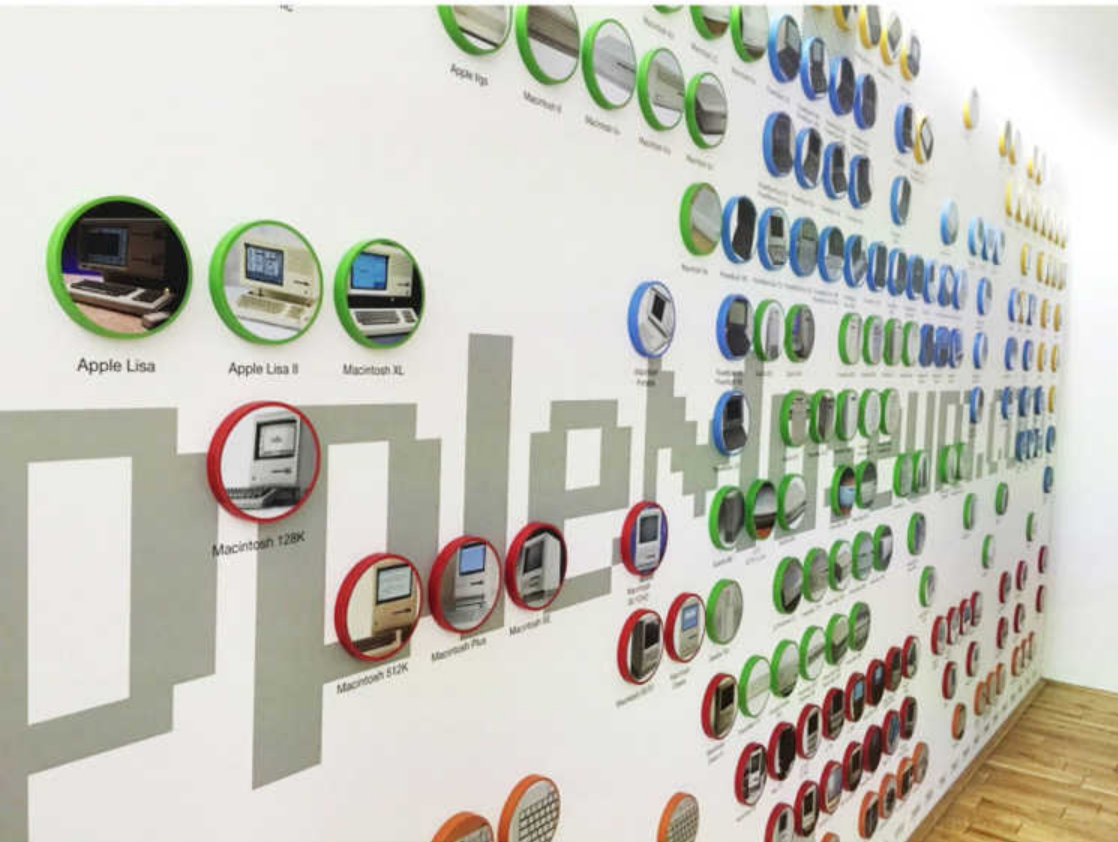
The Apple product family tree

Even though the Apple Museum doesn't have every Apple product ever released, it does a pretty good job of cataloguing them in this visual wall display.

Macintosh 128K

The launch of the Macintosh in 1984 serves as the opening
scene in the recent *Steve Jobs* movie.

Jobs & Woz

The Apple Museum doesn't just have products on display, it also has interesting vintage memorabilia, like this signed photo of Apple's original dream team.

Steve's uniform

And weirdly enough: a black turtleneck, a pair of blue jeans, and sneakers. Just to give visitors an idea of the Steve Jobs signature look.

Mobile museum guide

Fitting enough, visitors to the Apple Museum can access a tour guide via their iPhones. The museum has a dedicated mobile site with information on all the products on display.
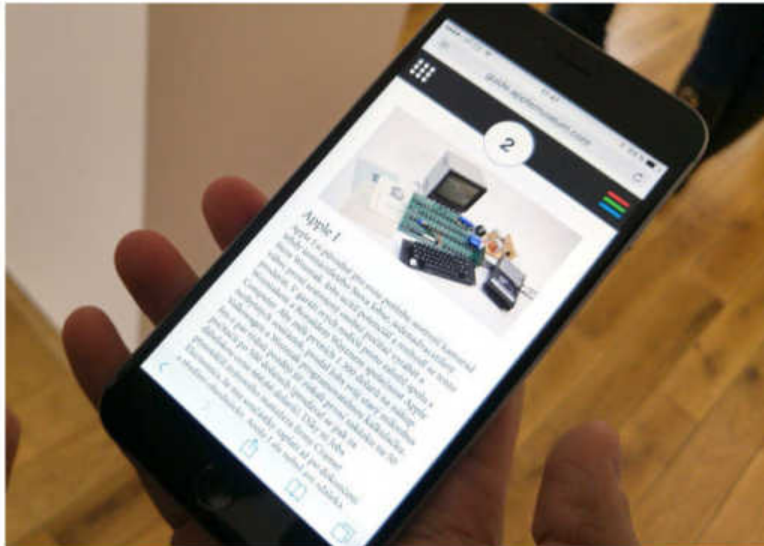
Newton eMate 300

A touchscreen laptop with a stylus and built-in keyboard?
Say hello to the iPad Pro's dad.

An Apple Car?

Somehow we doubt that Apple's forthcoming electric car will take any design inspiration from this heavily branded racing car.

iPod

Back when no one thought the 3.5mm headphone jack was too thick.

iPod Family Tree

The success of the iPod launched an entirely new product line for Apple.

Remembering Steve Jobs

The Apple Museum is perhaps more about Steve Jobs than it is about the company's history. The museum even includes products and memorabilia from when Jobs was ousted from Apple, including his stints at NeXT and Pixar. Here is a wall filled with adulation for the late founder.

iPhone

The most successful Apple product ever lives in a museum—and in a lot of people's hands.

the Unique
Exhibition
of Apple
Products
1976–2012

Opening Times

Monday	10:00 - 22:00
Tuesday	10:00 - 22:00
Wednesday	10:00 - 22:00
Thursday	10:00 - 22:00
Friday	10:00 - 22:00
Saturday	10:00 - 22:00
Sunday	10:00 - 22:00

Exit through the gift shop

To see more photos of the Apple Museum, check out MobileMania.cz (go.
macworld.com/applemuseumcz). ∎

Apple's convergence will be about input, not interface

Wondering about the evolution of Apple's devices? The answers can be found with the iPad Pro and Apple Pencil.

BY MICHAEL SIMON

There will be a day when our iPads and MacBooks run the same operating system. Despite what Tim Cook wants us to believe, the crossover potential is simply too tantalizing for it not to happen; in fact, I'm willing to bet that somewhere deep inside Jony Ive's laboratory there already exists a machine that merges the best of the mobile and desktop operating systems into a singular first-class experience.

But if the Surface and Pixel C have taught us anything, it's that two worlds aren't quite ready to meet. Even if Apple has dreamed up a technical solution to bring iOS and OS X together under one roof, there are a slew of little wrinkles that need to be ironed out before such a dream machine can even be considered for a keynote slot. The idea of Apple dropping a completely new device that pushes iOS onto a laptop or OS X onto a tablet seems illogical. Nothing about either operating system suggests an imminent convergence, and if anything, the iPad Pro proves just how far apart they are. Popping a keyboard onto a

tablet doesn't make it a laptop any more than adding wings to an automobile makes it an airplane.

Each of Apple's devices has a different but overlapping method of input and navigation, but before there can be any kind of OS convergence, there needs to be some sort of input simpatico.

It doesn't take a computer scientist to see that iOS isn't built for a mouse and OS X isn't made to be operated with our fingers. So, while a junction may be inevitable, it's more likely to come after a continued, gradual shift rather than a sudden one. Any semblance of convergence needs to begin with a way to meld the disparate ways we interact with our devices. And I think that's precisely what Apple is trying to do.

FINGER PROTOCOL

Of all the new things Apple released last year—the Apple Watch, Apple Music, a new MacBook, 3D Touch, to name a few—the iPad Pro might be the most exciting. It could easily have been a ho-hum device, a giant media-first tablet with more pixels and less portability than the iPad Air that targets a very specific niche and barely moves the needle on sales. But instead of an iPad mini for large hands, the iPad Pro is a seminal device.

I haven't spent a ton of time with one yet, but I've used it enough to

know that it demands a new approach to tablet computing. It's closer to a Mac than the iPad ever was, not just because of its size, but because of the way Apple wants us to use it. In many ways, it's the first true post-PC device, one that makes the dream of a perfect OS, with Mac-like levels of proficiency operating in an effortless, lightweight package, a real possibility.

It's not the interface that has changed, it's the input. A Surface-style touch keyboard was a given as soon as the iPad Pro was confirmed, but Apple did more than move the keys to a more comfortable position. Snapping a Smart Keyboard to the iPad Pro instantly creates a bridge between the desktop and mobile realms, not just with the quick keystrokes and onscreen shortcut bar, but also in how integral it is to the whole experience.

With the Air and the mini, Bluetooth keyboards are highly optional and occasional accessories that add

> **ANY SEMBLANCE OF CONVERGENCE NEEDS TO BEGIN WITH A WAY TO MELD THE DISPARATE WAYS WE INTERACT WITH OUR DEVICES. AND I THINK THAT'S PRECISELY WHAT APPLE IS TRYING TO DO.**

little more than convenient typing, but the Smart Keyboard is absolutely necessary to the iPad Pro, so much so that I'm surprised Apple didn't charge $200 extra and just include it in the box. It may be a baby step (and one borrowed from Microsoft, at that), but it's an important one in the evolution of iOS.

STUCK IN THE MIDDLE

If there's anything about the iPad Pro that's frustrating, it's that it's too much of an iPad. The first time I used one with the keyboard attached, I instinctively felt for a trackpad (despite the obvious lack of a cursor), and I found the need to reach up and tap the screen to open apps or select menu items to be somewhat counterproductive.

Much like OS X, the idea of implementing iOS keyboard shortcuts was to increase productivity by eliminating the need to change the position of your hands, saving precious seconds with each action. With the multitasking features baked into iOS 9 and the Smart Keyboard, the Pro has gone a long way toward elevating the iPad in the hierarchy of iOS devices, inching ever closer to a full-fledged post-PC device. All those little taps add up to serious time-saving measures, but the iPad Pro is in a sort of efficiency limbo, with the bulk of the interactions still happening on the screen.

The very system that's allowing the iPad to grow is the same one that's holding it back. Despite the extra pixels, unlocking the iPad Pro reveals the same home screen with the same 20-icon grid. Clearly that was done by design—one of the biggest issues with the original Surface was its complicated interface—but the current incarnation of iOS can only bring the iPad Pro so far. But Apple is clearly building toward a way to replicate the perfect ergonomics of the laptop on a tablet, and it seems determined to figure it out, just like it did with the mouse all those years ago.

PENCIL CASE

On the surface, the Apple Pencil doesn't seem like a breakthrough device. Battery advancements aside, it's essentially a powered stylus geared mainly for digital artists, wrapped in a pretty package and packed with the type of cutting-edge engineering you'd expect from Apple.

But the Apple Pencil is more than a drawing tool. It's a new kind of input device for Apple's post-PC world, a smart stylus if you will, and I don't think it's going to stay tethered to the iPad Pro for very long. Whether it gives birth to the input device that brings everything together remains to be seen, but the Apple Pencil represents a critical

juncture in the post-PC revolution: Our fingers can only do so much.

And with it, Apple may have cleared the biggest stumbling block to convergence. It's the reason why hybrids don't work and convertibles haven't caught on. With separate input methods for each device, there's an inherent disconnect; it's not just that iOS uses touch and OS X uses a mouse: the two OSs simply can't be operated any other way. Putting a trackpad on the Smart Keyboard makes no sense, and no matter how powerful iOS gets, it never will make sense, at least without a wholesale change to the interface, which seems unlikely. But the Apple Pencil is the first iOS accessory that pushes iOS beyond the limitations of our fingers, and I think Apple will further expand its capabilities as a tool on all of its tablets, not just the Pro.

THE MISSING LINK

Each of Apple's devices has a different but overlapping method of input and navigation—the Mac's trackpad and the Apple TV's remote both use multitouch; the Apple Watch and the iPhone use Force/3D Touch; Siri has varying degrees of power

> **THE VERY SYSTEM THAT'S ALLOWING THE iPAD TO GROW IS THE SAME ONE THAT'S HOLDING IT BACK.**

depending on the device you're using—but before there can be any kind of OS convergence, there needs to be some sort of input simpatico. And while it might seem like the iPad Pro introduced yet another one, I think the Apple Pencil is actually a step toward unity.

It's not that the Apple Pencil is going to become as ubiquitous as the mouse—though I can imagine adding a Siri button to the tip or allowing for motion control—but it shows that Apple is moving beyond standard multitouch as the sole input method on iOS devices. As the iPhone and iPad continue to evolve into devices more powerful than we ever imagined possible, Apple will continue to reimagine the role of touch. Maybe it's motion, or voice, or something we haven't dreamed of yet, but I'm sure Apple is already

working on a way to bring everything together. If iOS and OS X are ever going to merge into a single system, there needs to be a unified way to run it, one that doesn't require our fingers to constantly move from the keyboard to the screen.

Take Apple TV. The addition of Siri has transformed it into a next-generation device, and before long we'll be able to simply tell it to watch a specific movie or a basketball game, and it'll be smart enough to find it and instantly start playing. That's the level of simplicity and cohesiveness Apple needs to converge iOS and OS X and bring the post-PC revolution to reality.

Then the question won't be whether the iPad Pro can replace the MacBook. It'll be how did we ever live any other way. ∎

Reviews

The Latest Mac Products
Reviewed & Rated

SOFTWARE

NUMBERS 3.6.1 FOR MAC: THE BEST VERSION OF APPLE'S SPREADSHEET APP SO FAR

BY ROB GRIFFITHS

WHEN I LAST reviewed Numbers for OS X (go.macworld.com/numbersforosx), it was the first release of the "new" Numbers, and it came with a slew of changes—both good and bad—to the interface and feature set.

Now, two years on, Numbers has gained 0.6.1 version numbers (apple.com/mac/numbers), as well as some new features and changes to its interface. It's also a much stronger collaboration tool

**NUMBERS 3.6.1
FOR MAC**

★★★★

PRICE WHEN RATED
$20.00

COMPANY
apple.com

now, and you can work on spreadsheets on OS X, iOS, and the web.

ISSUES FROM THE ORIGINAL REVIEW
In my original review of version 3.0, I noted that the left-hand sidebar and customizable toolbar were both gone. While the left-hand sidebar is still gone, the customizable toolbar has returned: No longer are you stuck with the buttons Apple deems most important. (If you'd like some room back on the toolbar, consider removing the Tips button; it just pops up a few mostly-useless yellow text boxes.)

Beyond this one change, however, Numbers 3.6.1 looks much like Numbers 3.0. There's still no formatting bar below the customizable toolbar, so everything is still controlled by the context-sensitive right-hand panel. And while this cleans up the look a lot, it leads to lots of clicking between tabs in the panel for many common tasks.

Another annoyance that remains from version 3.0 is the lack of an editable formula bar. To edit a formula, you have to double-click the

NUMBERS ONCE AGAIN allows you to decide which buttons you'd like to see on the toolbar.
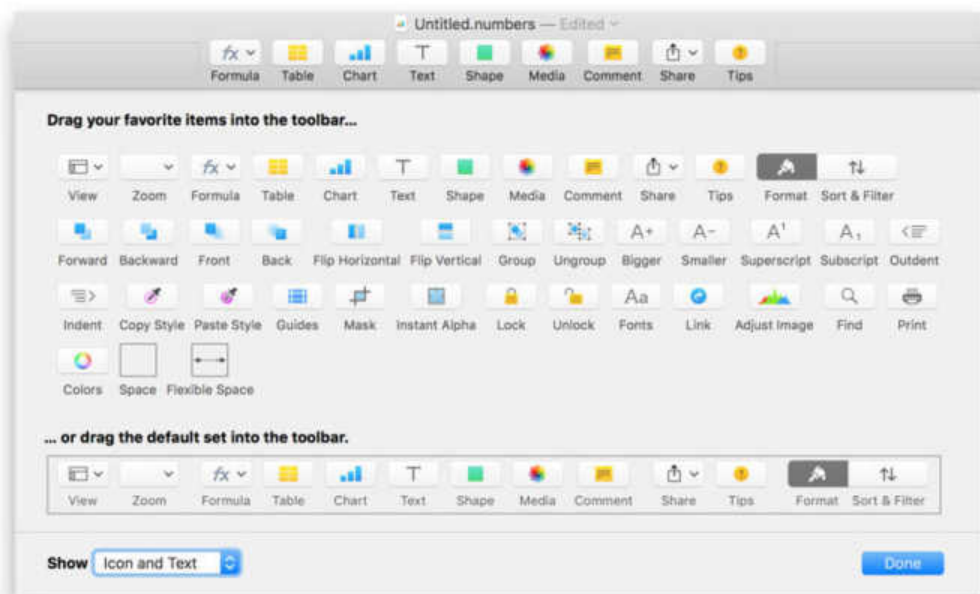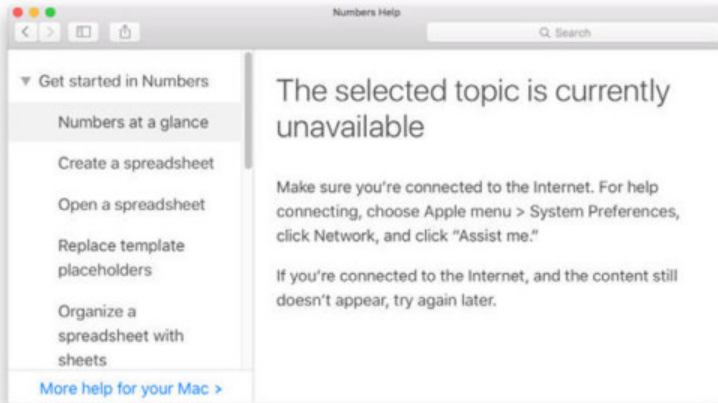
formula, which pops up a tiny editing box. This box can be both resized and moved, but for no reason I can discern, these changes aren't permanent, so you have to resize and move the formula box every time you use it (assuming you don't like its size/location).

AppleScript, which vanished in 3.0, has also returned from the dead, to the relief of scripters everywhere. (It's even gained a couple new options for PDF and Excel export.) Macros, which didn't exist before, still don't exist. I expect them to continue to not exist in all future versions, so macro users should look elsewhere.

This version of Numbers also returns Help to the app, sort of: Numbers no longer opens a webpage when you open help, but the in-app help viewer still requires an Internet connection. Get stuck with Numbers on a flight? Oh well, no help available. To me, this is inexcusable: Using the Internet to update help files is fine, but the base version of help should be available without a Net connection.

Performance is greatly improved when opening large worksheets. I have an 8MB test file that I've been using ever since Numbers first came out. Opening this file in Numbers 3.0 (and Numbers 2009) took nearly 30 seconds; in Numbers 3.6.1, it opens in about five, which is only a second or two slower than it opens in Excel. If you routinely work with large files, this is a most welcome improvement.

NEW AND/OR IMPROVED

The list of changes in Numbers (go.macworld.com/numberschanges), across all three platforms, is massive. (This page is an ever-building list, so it represents everything that's changed since the 3.0 release for Numbers.)

If you sort your data, Numbers (finally) lets you sort only a subset of rows in the table. In version 3.0, you had to sort all the rows in a table, which could wreak havoc on your data. Not only can you sort on a subset of rows, but you can sort on multiple columns as well, which makes sort much more useful.

One nice-to-have-back feature are the alignment guides for working with multiple tables on one sheet. These existed in pre-3.0 Numbers, and have returned to the 3.x series. As you drag one table around, alignment guides appear to help you properly align it relative to other tables on the sheet.

More specific to the latest Numbers update, charts have gained some new powers. You can easily add up to five reference lines to a graph, making it simple to display an average, median, mode, or custom value as a visual reference.

Another nice touch in graphs is the ability to use an image as the style for a chart (or table or shape). You do this by telling Numbers which image you'd like to use as the source for the object. Numbers then analyzes the colors in the image and applies them to the chosen object.

The end result can be quite compelling; in my

REFERENCE LINES make it easy to spot trends in graphs; you can add up to five such lines to any graph.

Boat sales by year
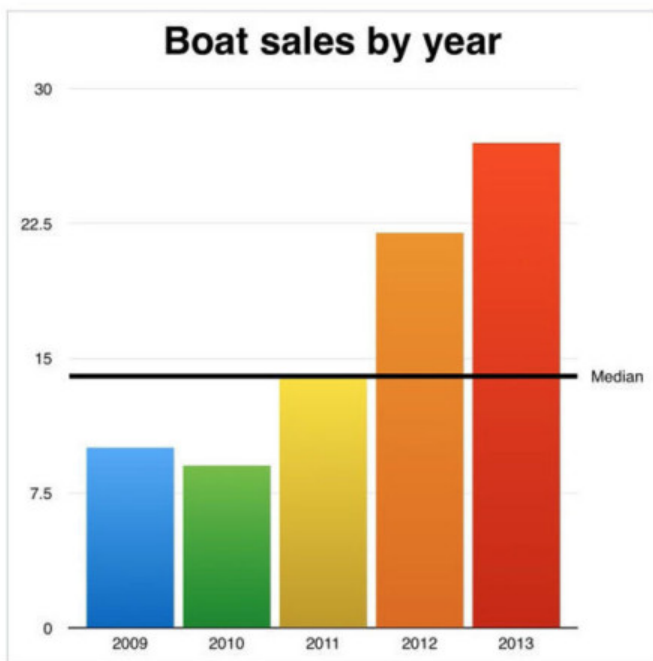
tests, Numbers did a good job of picking colors that really helped the objects blend with the photo on the table. If you're using Numbers to create complex reports with a mix of data, text, and objects, this feature can really help pull them together.

There are a number of other minor changes in this latest update, including improved Excel compatibility when reading and exporting, VoiceOver support for comments and charts, and the ability to view Photos' Collections, Moments, etc., from the Media Browser. And if you've purchased a new Magic Trackpad 2, you can use Force Touch on certain items in Numbers.

One final feature that's migrated from the iOS world is support for Split View: If you're working in Full Screen mode, you can slide over a second app to "multitask." If you find this feature useful, here's a tip: You're using a Mac. Simply don't enter Full Screen mode, and then you can work on more than two things at once!

Finally, there are a couple nice-looking new templates for simple budgeting and expense sharing. Neither of these will replace Quicken or a bill-sharing app on your iPhone, but both do a good job at demonstrating some of the things you can do with Numbers.
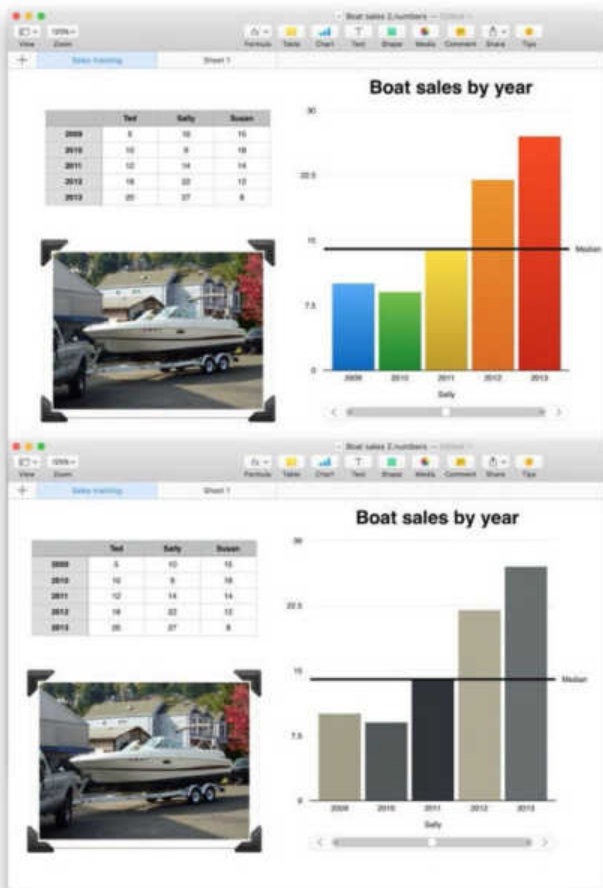
THE DEFAULT GRAPH (top) has a bold color scheme that clashes with the image of the boat. By having Numbers use the boat as a style for the chart, the end result is a much better color match (bottom).

IT'S A SHARING WORLD

Numbers is set up to work with iCloud Drive, meaning you can edit the same worksheet on OS X, iOS, and the web. I tested this using a number of devices on the local network, and it worked reasonably well. Changes would take up to a minute to sync, but I had no problems with changes made to the same document by several simultaneous users. Shared worksheets can also now be previewed on Android and iOS browsers, so users can see them without having to edit them.

> **THE INTERFACE IS GENERALLY PLEASANT, AND MANY OF THE PROVIDED TEMPLATES ARE GENUINELY USEFUL AND WELL DESIGNED.**

The collaboration level isn't quite up there with Google's Sheets, but it's probably sufficient for most users. Being able to save and edit anywhere is a definite strong point with Numbers.

BOTTOM LINE

Apple has added back many of the missing features from the original Numbers 3.0 transition, and that's a good thing. AppleScript support and the customizable toolbar improve the app's usability, and performance with large data sets has gotten much better. The interface is generally pleasant, and many of the provided templates are genuinely useful and well designed. Of course, if you work across iOS, OS X, and the web, Numbers' sharing features can't be beat.

Annoyances remain, of course. It's still a bit tricky to edit formulas, help still requires an Internet connection, and formatting objects requires lots of clicking around in the right-hand sidebar.

Overall, this version of Numbers is the best of the 3.x series; if you're still hanging on to Numbers 2009, you may find this version does everything you need it to do, and provides a number of features (particularly sharing) that aren't available in Numbers 2009. ∎

AUDIO SOFTWARE

CHAPTERS: MAC APP ADDS SEGMENT MARKS TO MP3 PODCASTS AND AUDIO FILES

BY GLENN FLEISHMAN

SOME APPS ARE highly focused; Chapters (chaptersapp.com) is clearly one of them. Chapters lets you add division markings—yes, chapters—to MP3 files, useful for podcasters who want to provide a quick way for listeners to jump to a segment or past one. It's also handy for making a single long MP3 file of a music performance, album, or lecture, and marking points along the way rather than dividing into individual audio file tracks, which have to be managed.

Divisions could be added to AAC files using a format defined by Apple to create so-called enhanced versions for years, but which aren't universally supported. An AAC chapter break can contain a title, a URL, and an image. A fair amount of OS X audio software, starting with the bare-bones and very useful Fission (rogueamoeba. com/fission) editor from Rogue Amoeba, supports AAC chapter

CHAPTERS 1.0

♦♦♦ ½

PRICE WHEN RATED
$20.00

COMPANY
Thomas Pritchard

40

creation and editing.

But MP3 chapters never seemed to get the respect, despite their definition in the MP3 metadata spec since 2005 (go.macworld.com/mp3spec) and their ostensible broader utility. An MP3 division mark allows a start and end time and optional text labels, which can contain URLs or other information. (There's even a third chapter format (podlove.org/simple-chapters), which uses XML and connects to feed syndication formats.)

(While there was a period in which AAC made strides as a podcast format partly because of the interest in Enhanced AAC and the better quality relative to file size possible, most of those podcast feeds seem to have reverted to MP3 for compatibility and simplicity—and because storage and bandwidth aren't quite at a premium they way they used to be.)

CHAPTERS' SIMPLE interface lets you set basic MP3 chapter parameters.
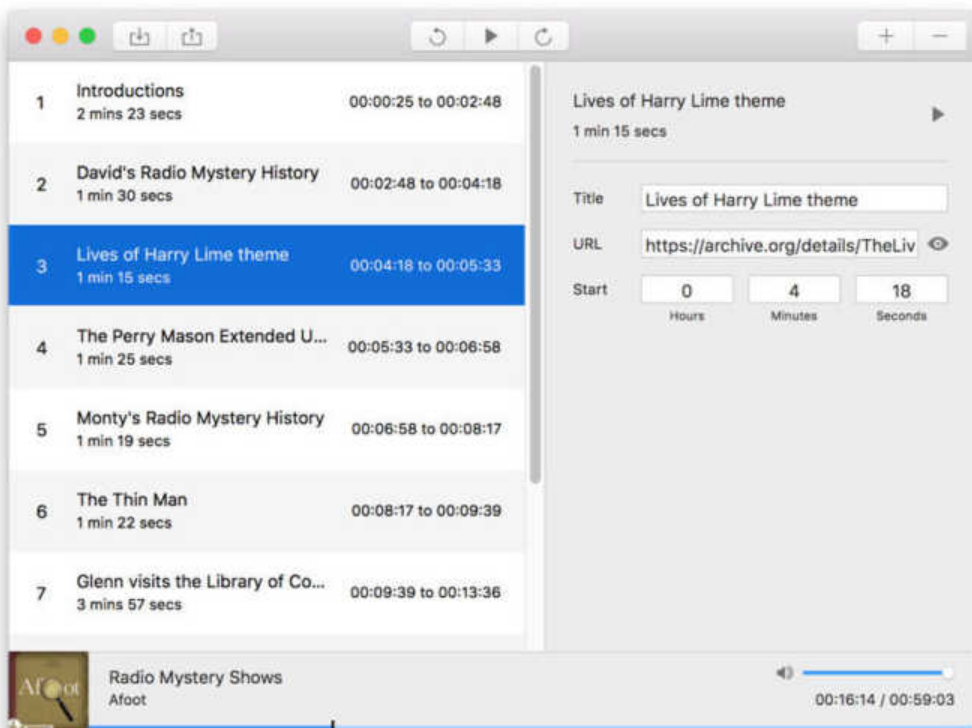
OVERCAST 2 properly displays chapters, showing them beneath show notes for an episode.

Chapters fills a missing niche and is currently the only OS X app to do so. It allows simple insertion of chapter marks, along with a label and a field defined as a URL for that label. It has a captive market for those who want to take advantage of chapter marks in MP3.

Its utility stems from the increasing support about podcast apps to display chapters for navigation. It was part of the Overcast update to version 2, a free donation-supported podcast player that appears to have been downloaded hundreds of thousands of times. But support also appears in Downcast (downcastapp.com), iCatcher! (go.macworld. com/icatcher), and Apple's mandatory Podcasts (go.macworld.com/ applepodcasts) app. Each app handles showing chapters differently, but they all display the list, have a way to click or tap to jump to that point in the audio, and enable a clickable link when a URL is specified. This metadata is simply ignored by players and audio editors that can't interpret it or modify it.

Chapters has a simple purpose and a straightforward interface. Launch it, and you're prompted to select an MP3. It opens with any chapters already set and lets you scrub through the audio and click the + sign to add a chapter at the point. You can adjust the time by entering values manually as well.

Each podcast chapter marker lets you set a label and URL, and you can click in the list chapters to edit those values, or click the play button above the chapter information to start playing at that point. When you're

done editing, you export the file. Be sure to export as a new filename rather than replacing your original file: I found the data wasn't retained when I chose that route.

All existing metadata in the file is preserved, even though it's not displayed in Chapters. That may come in a future release, and it would enhance the program, turning it into more of a full-fledged audio metadata editor.

Chapters executes well on its feature set, but it should stretch in future releases, especially at its current price ($15 during a launch special; $20 later). For example, instead of editing chapter data directly in an MP3 file, Chapters could allow the creation of chapter information for audio that's saved independently, and then allow applying that data to an MP3 and AAC file created by a user, with the appropriate features for each.

That's a minor quibble, though, given Chapters allows a feature you can't otherwise get. For those who need it, the price isn't an obstacle. ■

CHAPTERS EXECUTES WELL ON ITS FEATURE SET, BUT IT SHOULD STRETCH IN FUTURE RELEASES, ESPECIALLY AT ITS CURRENT PRICE ($15 DURING A LAUNCH SPECIAL; $20 LATER).

OS X UTILITY

DEFAULT FOLDER X 5: MAC APP ADVANCES THE STATE OF FILE NAVIGATION

BY GLENN FLEISHMAN

DEFAULT FOLDER X has long been among the first pieces of software I install on a Mac, alongside LaunchBar, 1Password, and TextExpander. With the public betas of El Capitan released during the summer of 2015 came a concern: A new security mechanism to protect core system files and directories against malware might prevent many kinds of utilities (go.macworld.com/utilitiessecurity) from functioning at all without disabling that protection.

The fear proved short-lived. With minor tweaks from Apple and hard work by developers, nearly all the software that seemed threatened—including disk-cloning tools—was updated or rewritten. Default Folder took the longest, and required rebooting into Recovery Disk, using a Terminal command, and rebooting again to keep version 4 functioning under El Capitan.

The wait was worth it, as Default Folder X 5.0.1 (go.macworld.com/defaultfolder) isn't just a rewrite that restores version 4's features. Rather, it's a spiffier expanded version with a somewhat crisper interface design that adds features I'd long hoped for. Overall, it's easier to use, while also having the advantage of not needing to patch OS X while working more robustly within Apple's limitations. (If you disabled System Integrity Protection, you can now re-enable it

DEFAULT FOLDER X 5

★★★★★

PRICE WHEN RATED
$35.00; $15.00 upgrade for users who bought a license before June 1, 2015.

COMPANY
St. Clair Software

with our instructions; go.macworld.com/reenablesystem.)

I'll start with a rundown of Default Folder X for those who aren't familiar with it, and wonder if it's for them. Those looking into whether to update to the latest version can scoot down to the new features section that follows.

NAVIGATIONAL BEACON

Default Folder X enhances OS X's often rudimentary navigation options, which have advanced only slightly in most respects since...System 7 or so. Whenever you use an Open or Save dialog, or any dialog that relies on OS X's file/folder navigation system, Default Folder steps in to make it better. (In System 7, I used the late, lamented DiskTop (tidbits.com/article/2001); Default Folder has always seemed its spiritual heir.)

One could argue that it's submenus that define Default Folder's
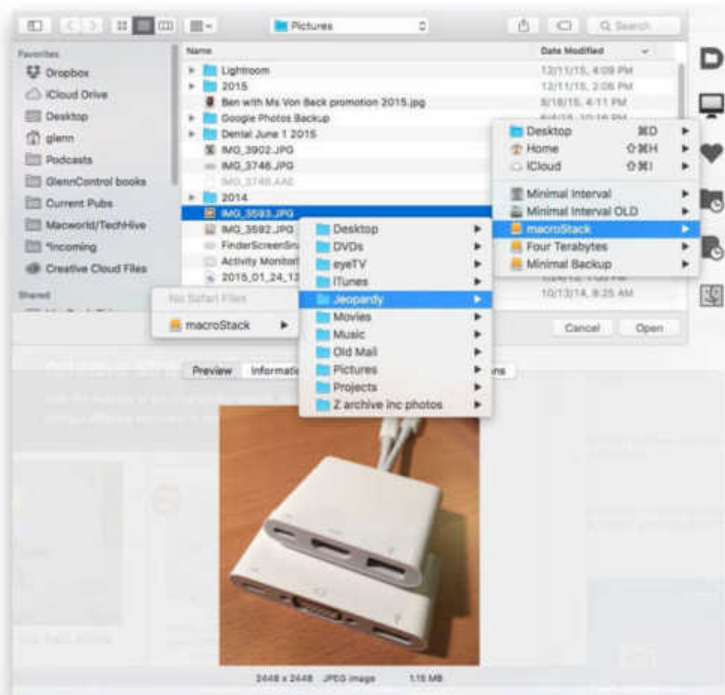
particular approach. Everywhere you use the app, whether in dialogs, from a system menu drop-down icon, or in an optional Finder toolbar add-on, Default Folder always shows or has an option you can set to show the complete hierarchical set of nested folders below and parent folders above every folder. You never have to use the Command-up arrow and -down arrow to move around, if you don't want to.

The app primarily functions like a dialog box overlay, rather than replacing features within the window: It surrounds navigation to offer options. It lets you set a default folder specific to the application you're using, and has a "boomerang" effect—optional, as with nearly every feature—that snaps you back to the last file selected whenever you choose an Open dialog in an app.

Off to the right side (switchable to the left) sits a stack of six icons that grant core access to Default Folder's features. The Utility menu—the one at the top with the app's icon—reveals file and folder actions, including the very useful Open In Finder, which takes the current folder selection and opens a Finder window. I use this constantly. You can also compress, rename, and delete files and folders, among other tasks.

The other five icons provide easy access to different file and folder locations, always with submenus: The Computer menu shows Desktop, Home, and iCloud, as well as all mounted volumes; Favorite shows the current set of folders you've marked for routine access (multiple sets are supported); Recent Folders shows just that, while Recent Files shows recently accessed files that the current application can open; finally, the Finder Window menu reveals all open Finder windows. I use Recent
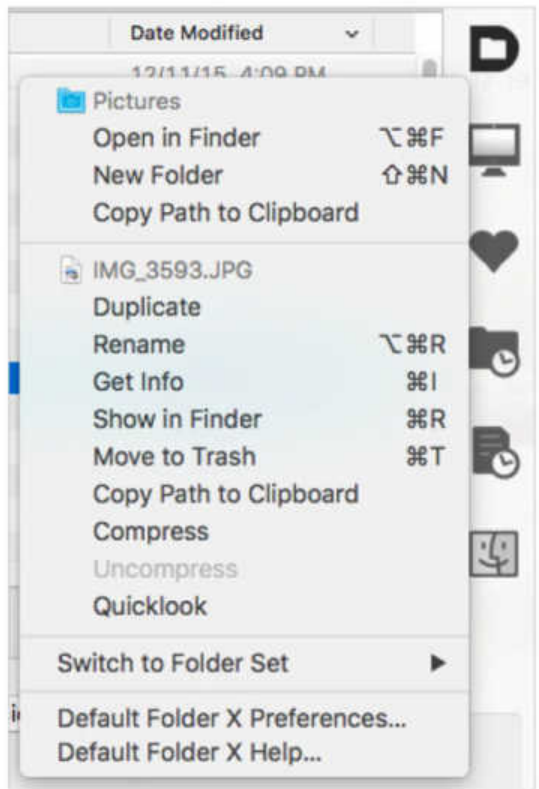
THE UTILITIES MENU puts Finder and other commands at your fingertips for any file or folder in navigation dialog.

Folders most frequently for selection, and with the Option-left arrow and -right arrow keyboard shortcuts, which move you forward and backward in the list. I've probably saved a week in total over many years through those shortcuts alone—I'm exaggerating only slightly.

Just this would be enough to make the typical OS X user's life more efficient. Among other things, it eliminates the need to have folders on the Desktop or in the Sidebar, or make use of Apple's limited Recent Places option in the pop-up. But there is more—oh, so much more.

For starters, you can navigate to any open Finder window directly with a dialog open by hovering over the window and then clicking. (You can make this less obtrusive by requiring either or both Control and Command to be pressed when you click.) Default Folder also lets you modify the Finder, adding options that provide direct access to its navigation in Finder windows. This symmetry and interaction removes a lot of OS X's friction, as anything in the Finder becomes accessible from a dialog and

A FAVORITES TAB provides quick access to frequent folders.

vice-versa.

Although I haven't used this feature, Default Folder lets you create folder sets of favorites and, literally, default folders assigned to applications. If you work regularly on projects that require interacting with lots of folder locations, switching sets lets you keep your lists short while also redirecting apps to open right where you want them for that particular task.

Default Folder's navigational overlay has two other areas of interest. With any file or folder selected, the bottom shows a multitab interface that includes Preview, Information, Tags, Comments, and Permissions. Preview is a frame-constrained QuickLook view, although you can still use OS X's Command-space option within a dialog to see a full-sized version.

On the left, a new Drag Zone into which you can drop what I'd call super-favorites: files or folders that you need so frequently that it's useful to have them always at your fingertips. The same items can be shown in a drawer in the Finder by setting a preference in the app.

Default Folder should be a great enhancement for anyone who

interacts with multiple file locations in OS X. Some people do organize themselves entirely around the Home directory with little nesting. But with more than a handful of folders, this app smooths away so much of the tedium of regular navigation. The latest version tries to help you understand how, too: In the General tab of its preferences, it shows you how many times you've invoked it over a period of time.

VERSION 5 IS MORE THAN A FACELIFT
For previous Default Folder X users, this latest release is a solid update with a fairly large variety of new features. The developer promises still more to come—his wish list of things to add still has items left to cross off. The installation process can copy your version 4 settings and remove the Default Folder preference pane that was previously required. The new app is one of those semi-apps: mostly accessed through its system menu-bar item, with a sort-of-floats-above prefer-ences window you can invoke. (I really do hate a window that I can't reliably stack or access among other app windows, though.)

Most notable is the addition of a Recent Files menu, the ability to add a Finder toolbar icon, and the Drag Zone, where you can place fre-quently used files and folders—and opt to display as a drawer in the Finder.

A minor frustration that came with the addition of tabbed windows in
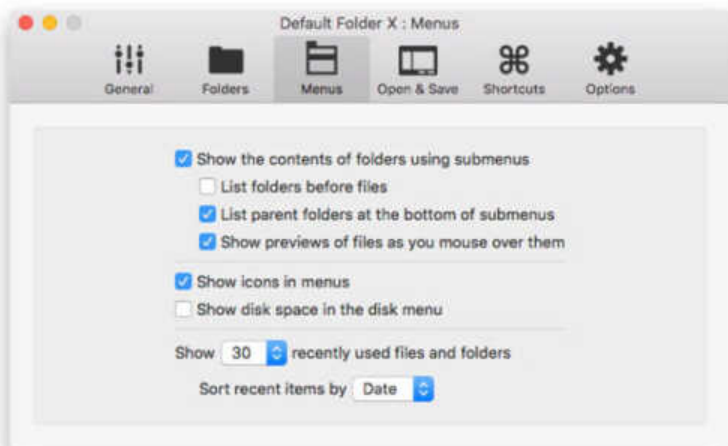
DEFAULT FOLDER'S MENUS preferences let you adjust submenus and sorting.

the Finder has been partially resolved: You can now select among tabs in a navigational dialog from the Finder Window menu. This alone will save a lot of my monkeying around to make sure the right tab is frontmost. While you still can't hover over Finder windows and select among tabs by clicking, you can right-click and a pop-up menu appears for all open tabs in that window; you can also Control-click unless you've set Control or Command as required for hover-over selection.

Default Folder always had a lot of keyboard short-cuts; now it has even more, and you can set the key combinations for them, too. This includes navigation in the Finder for next and previous most recent folders—very handy and bringing more of the same kind of symmetry between dialogs and the Finder that the app already offered.

The Utility menu now neatly differentiates features available for the current folder view and selected files and folders. This context helps. The app also has interface themes, so you can opt among light, dark, and compact overlays.

> **DEFAULT FOLDER ALWAYS HAD A LOT OF KEYBOARD SHORTCUTS; NOW IT HAS EVEN MORE, AND YOU CAN SET THE KEY COMBINATIONS FOR THEM, TOO.**

For those who want this, you can opt to sort all folders above files in navigation views. This feels very Windows-y to me, and I don't prefer it, but it's something a lot of people like. This is the first release to enable it.

The new Default Folders features within Folders preferences lets you associate apps and their initial or permanent default folder. For Save dialogs, the new version can also map file extensions to specific folder locations, too, if you're always saving image file formats to one folder, for instance.

St. Clair didn't provide a comprehensive list of removed features and new ones. But I miss only two. OS X picked up a feature I always loved: In a Save dialog, click a file in the list and it's copied into the name field. Before that was an OS X feature, Default Folder let you do the same, but you could add modifier keys to avoid clicking accidentally. That's been removed. And there was an Option-key bypass that let you override an application's filter for only opening file types it knew. This was helpful when you had a file with the wrong or missing extension or attributes,

and you could force an app to open it this way.

Default Folder's polite OS X integration comes at a slight price on both Macs I've tested it on. There's a brief lag when it's invoked, instead of the nearly instantaneous appearance with version 4. In some cases, the keystrokes I type are lost or misinterpreted if I don't pause to wait the second or so for the interface to snap fully into shape. It's a slight annoyance, and I'll re-train myself soon enough to wait.

STRONGER, BETTER, FASTER

I've been a fan of Default Folder X for years, and version 5 is a significant step forward, and one that puts its developer on a solid footing for future releases of OS X. For those who have never used it, I previously recommended it tip-top on my utilities list; now, I just say the same thing louder. Existing users shouldn't give a second thought before moving to this new release.

Default Folder X 5 is $35, although owners of any previous version can pay just $15 for an upgrade. Those who purchased version 4 starting June 1, 2015, can obtain a free upgrade. St. Clair Software offers a free 30-day trial, as well. ■

PASSWORD MANAGER

DASHLANE 4: EASY AND CONVENIENT PASSWORD MANAGEMENT FOR YOUR MAC

BY MARCO TABINI

IT'S A LITTLE SCARY to think that the lowly password is, in many cases, all that separates our most private data from utter ruin. Passwords are hard to get right, and all too easy to accidentally let fall in the hands of the shady characters that lurk around the dark corners of the Internet, ready to steal every last bit of our digital footprints for their own profit.

Luckily, this generates demand for apps that can help us manage our passwords, like Dashlane's eponymous app (go.macworld.com/dashlaneapp), which is now in its fourth major release and acts as a "digital vault" in which all kinds of private information can be stored and encrypted using a single "master password."

DASHLANE 4 FOR MAC

♦♦♦♦½

PRICE WHEN RATED
Free; Premium, $40.00 per year

COMPANY
Dashlane

PASS THE WORD

Like every other app in this space, Dashlane's primary function is to save and collect the usernames and passwords you use to connect to various websites. The app's interface, however, seems to have been built with the (correct) idea that most users lack the expertise to manage their online identities correctly.

Thus, you can expect a lot of hand-holding at every step of the way. This is immediately evident when you first launch the app, which takes you through a detailed step-by-step process to pick a master password, install the appropriate extensions for all your browsers, and import your

DASHLANE STORES ALL your passwords in a secure digital vault; it automatically matches them to the appropriate icon or logo, and features a powerful search function for quick access.
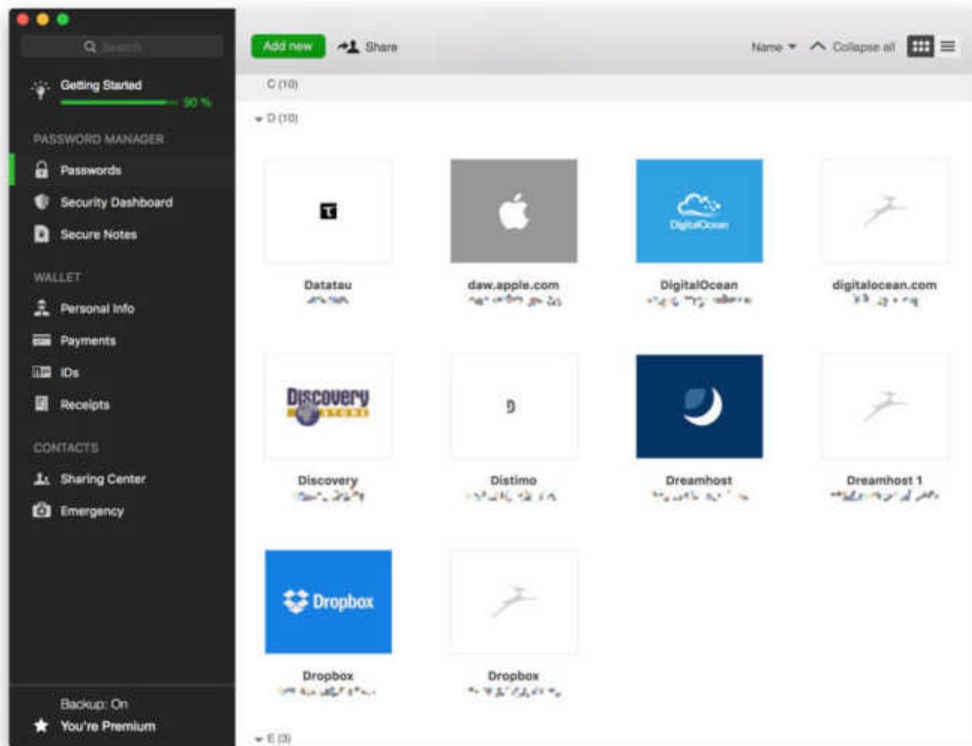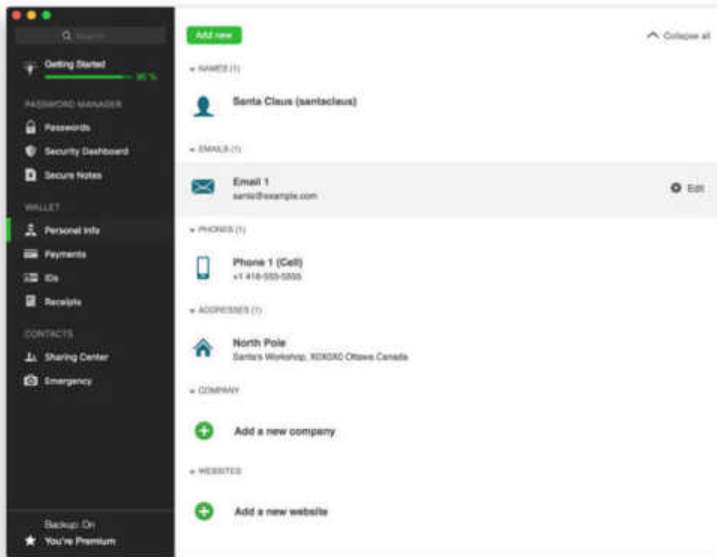
existing information from other password managers.

If you're a password management veteran, this welcoming mat is a bit on the heavy side, but it's certain to be a boon to less experienced users. For my part, I will note that I imported all kinds of data from two of Dashlane's competitors as well as from my Mac's keychain, without any problem whatsoever.

AN EXTENSION IN EVERY BROWSER

Dashlane is compatible with all three popular browsers and makes installing extensions for Safari, Chrome, and Firefox as easy as picking an item from a menu and following a few instructions.

In addition to logins and passwords, you can use Dashlane to autofill all kinds of forms with your personal information and credit card data. Unlike Safari's own autofill, the app will also save and fill the CVV code on your credit cards, which makes for fewer trips into your wallet when you want to buy something online.

In keeping with the rest of the user interface, the browser extensions tend to be quite verbose. For example, when they detect a new login, they display a modal dialog that captures the browser's entire input until

you've decided whether you want to store the username and password inside Dashlane. Like with the introduction, this feels a bit overbearing but is also a great way to encourage users to save as much of their data as possible for later use.

THE GOOD KIND OF AUDIT

Managing your passwords doesn't just mean saving them and using them to quickly fill out login forms, of course. You also need to choose good passwords that are hard to guess, avoid using them across multiple websites, and make sure that they are changed on a regular basis.

Thanks to a couple of handy features, Dashlane makes this process very easy. The first, which goes by the name of Security Dashboard, audits the contents of your digital vault for passwords that need changing because they are either too weak, too old, or too frequently used. The dashboard provides a clear visual representation of what needs to be done and even suggests some quick actions that improve your situation with minimal effort.
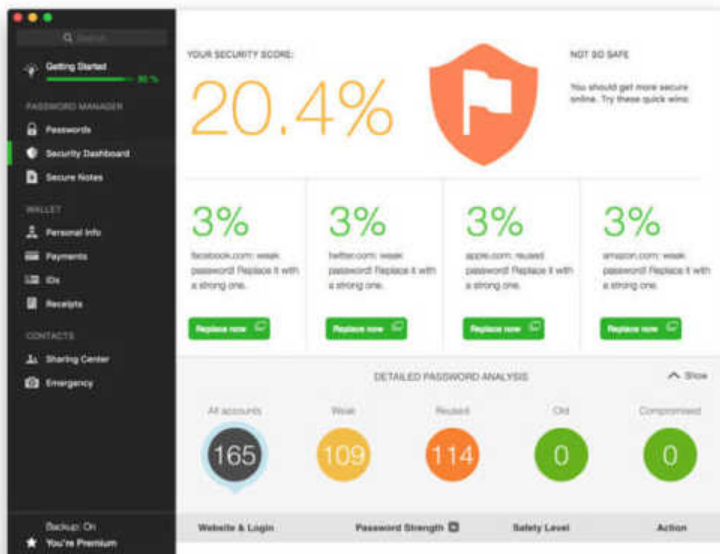
THE SECURITY DASHBOARD analyzes your passwords and tells you which ones need changing because they are too weak or have been reused across multiple sites. In many cases, the app can even change your logins without any manual intervention.

The second, appropriately named Password Changer, allows you to automatically change your password on a number of popular websites without actually having to visit them: You simply provide the new password, and Dashlane takes care of the entire process for you; it even allows you to address multiple sites at the same time, using a different strong passphrase for each of them.

SYNCING TO CONCLUSIONS

The basic version of Dashlane is free, and can only store your private data—encrypted using industry-standard algorithms—locally on your hard drive.

If you want to back up your digital vault or synchronize it across multiple devices, including those running iOS and Windows, the company also offers a custom cloud offering that saves all the information on its servers for a fee of $40 per year. This also comes with the ability to access your passwords over the Web and share them in a secure way with colleagues and family members.

It may seem odd to trust all your sensitive information to a third party over which you have no control, but it's really no different than what happens with any other app of this kind, and there's no reason to

believe that the folks behind Dashlane are nothing but dead serious about the security of their cloud offer.

Ultimately, Dashlane is a great digital vault, particularly for users that need a little help navigating the sometimes complex world of security. It integrates well with all the apps you're likely to use every day, offers a compelling sync offering, and automates many drudging tasks that, while crucial to good password hygiene, are often overlooked because of their menial nature.

BOTTOM LINE

Ultimately, Dashlane is a great digital vault, particularly for users that need a little help navigating the sometimes complex world of security. It integrates well with all the apps you're likely to use every day, offers a compelling sync offering, and automates many drudging tasks that, while crucial to good password hygiene, are often overlooked because of their menial nature.

The app's unique selling feature is its extraordinary user-friendliness. If you're worried about the safety of your online data but haven't ever quite managed to feel comfortable with a password manager because it felt too difficult to use, I'd bet that Dashlane would be a welcome breath of fresh air, particularly given its price point, and a great way to finally get a handle on what could be one of the most important aspects of your Internet life. ■

Hot Stuff

GRIFFIN TECHNOLOGY'S TRAVEL POWER BANK

Carrying an extra cable just to charge the Apple Watch when traveling can be a bit of a pain. The Apple Watch Magnetic Cable is longer than a Lightning cable (easier to get tangled) and the magnetic puck can sometimes get caught inside your tightly packed luggage. The $70 Travel Power Bank (griffintechnology.com) aims to solve that very problem—this tiny portable battery packs 800mAh of power, which is enough to fully charge your Apple Watch four times. When the Travel Power Bank runs out of power, it can be recharged with a built-in micro-USB cable. This portable battery/charger hybrid has a keyring attached to it so you can clip it to your keys or to your luggage for easy access. **—OSCAR RAYMUNDO**

PURO SOUND LABS BT5200 BLUETOOTH WIRELESS HEADPHONES

Prolonged exposure to loud noise—especially at higher volumes—can cause permanent hearing damage in a surprisingly short amount of time. But Puro Sound Labs promises its $130 BT5200 Bluetooth headphones (purosound.com) can reduce your risk of noise-induced hearing loss while listening to music. Puro's headphones create a tight seal around your ears to drown out ambient noise (Puro claims its headphones reduce background noise by up to 82 percent). Ambient noise reduction is important: If there's too much noise around you, you'll feel the need to make the volume louder and louder to hear your music. The louder the volume, the more likely you are to damage your hearing. The headphones also actively analyze the incoming signal when you connect them to an audio source, and let you know if your chosen volume clocks in at less than 85 decibels—what Puro considers a safe volume.

—THEO NICOLAKIS

Hot Stuff

WEBOOST EQO

I live relatively far from a major metropolitan area, so my cellular connection is not always the best. Sometimes, I have to take calls with my head out the back door so I can get more than one bar of signal. The struggle is real. WeBoost hopes to help alleviate that struggle with the $350 Eqo signal booster (www.weboost.com). It's actually two devices in one—a main amplifier with a built-in antenna, and a satellite amplifier, which you'd theoretically put by a window in your house to help fill in any gaps of coverage from the outside. From our brief testing, the Eqo works ridiculously well and takes mere minutes to set up. It works on all five major LTE bands in the United States, including those used by Verizon, AT&T, T-Mobile, and Sprint. The only downside is that the Eqo is limited to 1,200 square feet, so you'll need a different setup if you've got a larger house. But for apartments and smaller town homes, this is a great way to eliminate the hassle of staying in one very particular spot of your house just to take a phone call. **–FLORENCE ION**

NOVELS ROCK 'N' ROLL
STAND-UP COMEDY JAZZ
VIDEO GAMES MOVIES
COMIC BOOKS TALK RADIO

EVERY NEW ART FORM HAS ITS FIGHT FOR FREE SPEECH.

OUR TIME IS NOW
FIGHT FOR YOUR VIDEO GAMES

VIDEOGAMEVOTERS.ORG
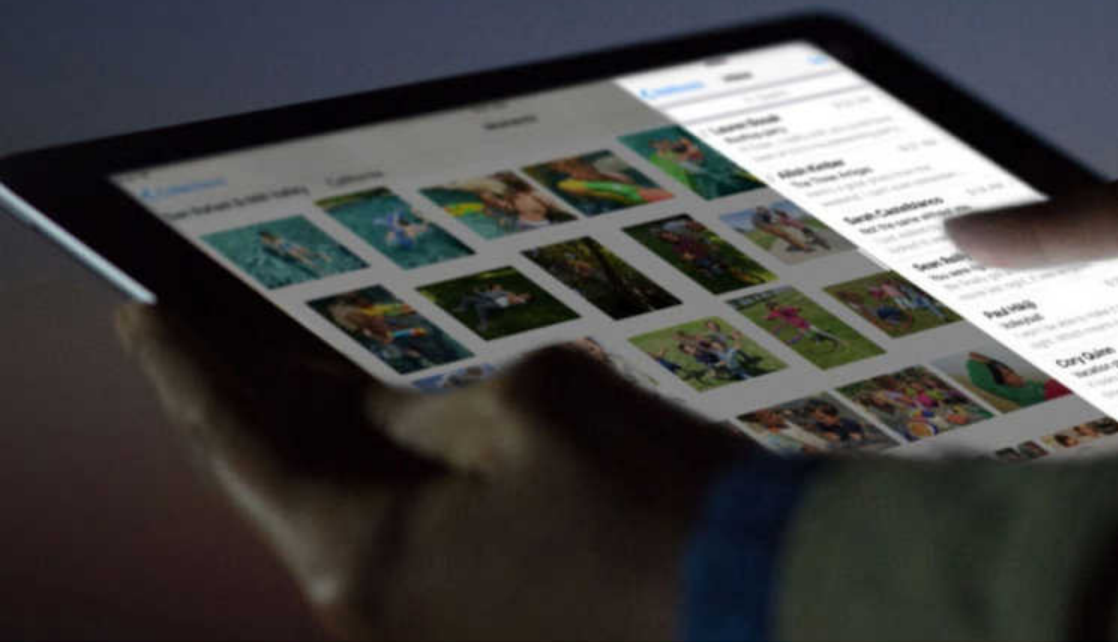
Does iOS 9.3 herald a new release strategy?

With the maturity of the smartphone market, Apple may be taking a different approach to upgrading iOS.

BY DAN MOREN

Over the last almost-decade, Apple's established a pretty consistent pattern when it comes to its mobile OS. Every year, the company launches a new major version of iOS, usually alongside a flagship smartphone release. After the new software hits, the subsequent months see a flurry of intermittent, smaller updates, usually fixing bugs, patching security, and perhaps even tweaking a minor feature or two.

It's pretty rare for Apple to use these "point releases" to add more substantial new features, but that's just what happened recently, when the company not only put out a beta version of iOS 9.3 for developers, but also posted a page (apple.com/ios/preview) of the not-insignificant

features included in it. As my savvy colleague Jason Snell pointed out, it was a good way to upend the traditional pattern wherein a beta is released to developers, and media outlets trip over themselves to be the first to find all the features squirreled away within it.

But it also potentially speaks to a shift in the way that Apple's treating updating iOS, and that could be a very good thing indeed.

The goal now seems one of sustainability: keeping the iPhone and its users updated and happy, possibly with a steady stream of smaller updates rather than a single major tentpole release every summer.

THE MONOLITH

The thing about major OS releases every year is that they're predictable. That's both good and bad: good because there's a clear, if unspoken, target for Apple and third-party developers alike; bad because of the sheer nature of predictability—we know when

new features are going to drop, and we often have a decent idea of what some of those features will be. More to the point, we know that during the rest of the year, new features and capabilities are unlikely to materialize. Christmas only comes once a year.

It's also seemed, in the past, that improvement upon previous versions of iOS dwindles as a new release approaches. There are bug fixes and security updates, of course, but even those are few and far between. Until last year's release of iOS 8.3, previous versions of iOS had never even reached that milestone—the previous record holder was iOS 4.2.1. Then it was on to the next major release, along with new features, bugs, and hurdles. If there were lingering issues or missing functionality, you'd better hope Apple decided to fix it in the next major update.

SUSTAINING MEMBERS

There's no denying that Apple's current approach has worked fine so far. I certainly wouldn't argue that it hasn't been successful. But the platform and the smartphone market as a whole have both evolved considerably. So many of those early releases were about filling in low-hanging functionality—remember that cut, copy, and paste weren't added until iOS 3—that it made sense to focus on major releases.

But these days, the smartphone is a mature product. Since the iPhone's release nine years ago this summer, it's become an indispensable—if not *the* indispensable—piece of technology for most of us. There are still plenty of advances to be made, but if Apple's focus on branching out into new categories like the Apple Watch is any indication, the smartphone's place in our world is clearly assured. It's the elder statesman, not the young, scrappy, and hungry upstart.

So, to me, the goal now seems one of sustainability: keeping the iPhone and its users updated and happy, possibly with a steady stream of smaller updates rather than a single major tentpole release every summer.

WE'RE DOING IT LIVE

This approach—or a mix of the two—can prove quite effective. I'm thinking in particular of the path I've watched game developer Bungie take with its massively multiplayer online game Destiny. The company has said in the past that it has a ten-year plan for the game, and after it released the first version of the game—to admittedly mixed reviews—in fall 2014, it followed it up with two major expansions, spaced a few months apart. That was followed by a much more significant—and much better regarded—release a year after the initial game launched.

Since then, however, Bungie has spoken of its plan to change from releasing downloadable expansions to instead focusing on having in-game events occur from time to time. Rather than simply adding new story content or items to the existing game, these events take more offbeat forms: a charming festival during Halloween that let players collect candy and earn costumes, or a totally new racing mode over the winter holidays in which players could compete on their speeder bikes and earn fun rewards. While those updates may be ancillary to the main thrust of the game, they keep players engaged and—more importantly—coming back.

Bungie's Live Team (go.macworld. com/BungiesLiveTeam) is responsible for deploying and managing these events, and they've done a solid job so far. It's a clever way to keep the game fresh and interesting without having to be locked into the pattern that Bungie had established in its first year of major downloadable content releases.

STEADY, NOT SLOW

Could Apple do something similar? Perhaps. What if this year's "big" release at the Worldwide Developers Conference wasn't iOS 10, but instead iOS 9.5? There might be cries of bloody murder and Apple doom—though what Apple decision hasn't been heralded by those—but this might also provide a way for Apple to focus on improving software quality and reliability, another topic on which there has been much written of late.

None of this means that development or innovation in iOS need grind to a halt. But we're not in the gold-rush period of the early release of the smartphone, exciting as it was. So perhaps it's time for the smartphone to settle down and become something a little steadier, a little stabler, and a little more modest—as befits the device that we depend on every day. ■

> **WHAT IF THIS YEAR'S 'BIG' RELEASE AT THE WORLDWIDE DEVELOPERS CONFERENCE WASN'T iOS 10, BUT INSTEAD iOS 9.5?**

Switch to six digits for your iOS passcode

A court case makes it clear the government can at least try to brute-force your iPhone's four-digit passcode

BY GLENN FLEISHMAN

It's been thought for a while that a four-digit passcode on an iPhone (and other devices) was too weak. While Apple had safeguards in place to prevent repeated failed attempts, a proof of concept in March 2015 showed how that could be bypassed (go.macworld.com/IPBoxCracker) by disassembling a phone and carefully cutting power at the right instant after a failure. As noted in the post, this "IP Box" cracker works even with the option set to erase a phone after 10 failed PIN attempts—iOS never counts the failed attempts because power is cut.

Anything that's shown publicly is clearly available privately to anyone with the effort and resources, which typically includes government agencies (in democracies and elsewhere) and criminals, and any individual with enough interest in extracting data from a device.

In a U.S. District Court filing December 16 related to an international heroin interception at an airport, a judge agreed to suppress evidence obtained from a courier's iPhone. The case isn't the interesting part, but rather what a Homeland Security agent testified about: That his colleagues routinely use an IP Box, or something they describe as such, to crack iPhones.

The issue in the case was whether compelling the courier to give his passcode before he had been notified of his rights meant the evidence should be suppressed. The agent was brought to testify that it was trivial enough to extract the

data with an IP Box, and thus that it was of no consequence whether or not that passcode was obtained improperly as they could just crack the phone.

The judge didn't buy it, partly because in another case in which Apple is a player and has made waves, U.S. attorneys maintain that using such a cracking device has a risk of destroying the data on the phone. And the agent testifying had never used the hardware himself, but was relating stories from colleagues who had. (The agent's name? Bauer. But not Jack Bauer.)

LONGER IS BETTER AND THE TOUCH ID RISK

Of course, I don't assume you, dear reader, are engaged in criminal activity, but as I say: Anything a legitimate party has access to with all the niceties of constitutional protection is also something ne'er-do-wells can employ to their own ends.

Apple shifted to promoting six-digit passcodes with iOS 9, making them the default option and making it easy to shift from four to six with a selectable option. Likewise, with its so-called two-factor authentication, Apple shifted from four to six digits for confirmation codes from its previous two-step verification method. (Many verification codes from other parties are already six or eight digits long.)

So this indirect news from the government, even if it's a choice they prefer not to engage in for getting access to a phone, should shift your thinking about whether four digits is enough. It shouldn't be much harder to memorize six than four, and entering it isn't a terrible inconvenience.

You can upgrade from four digits to six by following these steps:

1. Launch Settings and tap Passcode or Touch ID & Passcode.

2. Enter your current passcode.

3. Tap Change Passcode.

4. Apple prompts for a six-digit code, which just shows you how eager they are to have you upgrade. Enter the new code and verify it.

Of course, this raises the question of Touch ID. If a four-digit code can potentially be cracked, how secure is your fingerprint?

In America, we still don't have a determination on that. Being asked

iOS PUSHES YOU TOWARD six digits, which is a more secure passcode length.

for a passcode in a domestically occurring matter appears to violate rights against self-incrimination. The police ostensibly can't demand it, but a judge might order it later. (At the U.S. border, you can be compelled to provide any password asked for, however.)

However, fingerprints don't have the same clear protection. In a court case in Virginia in October 2014, a judge ruled that because police can obtain a fingerprint, DNA, or a

physical key to a house, a fingerprint to unlock a device has no special protection.

This might argue that if you're in a vulnerable position but feel that you would never give up your passcode under legal compulsion or potential another threat, you should use a six-digit passcode and disable Apple ID.

ISN'T THIS TOO SERIOUS?

This all sounds rather heavy, but I think it's a valuable exercise even when you don't expect to stopped and searched or kidnapped by organized crime (or just have your phone stolen with some valuable company or personal information in it).

We use these tools to secure our devices because we want to retain our privacy and secure our liberty against unwanted or overpowering intrusion. Our intent is clear, even if we never find ourselves in a "24"-like situation. ■

Andrew Jarecki, director of HBO's *The Jinx*, brings his storytelling skills to iOS with KnowMe

Jarecki's new video-editing app creates cinematic narratives out of photos and iPhone footage.

BY CAITLIN McGARRY

Andrew Jarecki is best known as the filmmaker who elicited a confession from killer Robert Durst in the finale of the HBO docu-series *The Jinx.* What does a person do after that? Jarecki's latest project isn't another spine-tingling documentary—it's an iPhone app that lets you construct your own narrative.

Jarecki interviewed some 100 people while filming *The Jinx,* and told me these interviews inspired the idea for KnowMe (knowme.com/app), an app that brings lightweight film editing tools to iOS.

"I was struck by how strongly they wanted to tell their story, and this basic internal need people have to do that," Jarecki said during an interview recently in New York. "There is this drive to be known—and not necessarily to be known and be famous, but also to be understood. In a weird way the Bob Durst thing was him saying, 'I want you to ask me questions so I can explain to you who I really am.' This is a guy [who] was actually a murderer and was still feeling not understood."

Unlike Snapchat and Instagram, which bury their video-editing tools within a larger app, KnowMe puts everything you need on the main screen. You can shoot from your front- and rear-facing cameras, choose photos and video clips from your Camera Roll, and import music, all the while adding voiceover to create a visual story without ever leaving the creation screen. One of KnowMe's most unique features lets you easily switch between audio you record to narrate a clip and the clip's existing audio. And, of course, you can share your videos publicly to your social networks or privately via text message.

ONE OF KNOWME'S MOST UNIQUE FEATURES LETS YOU EASILY SWITCH BETWEEN AUDIO YOU RECORD TO NARRATE A CLIP AND THE CLIP'S EXISTING AUDIO.

Jarecki has done this before—created a tech-based solution to what he saw as a human need. Back in 1989, he helped found Moviefone, which made finding movie times as easy as dialing the now-familiar 777-FILM phone number. (It's hard to remember a time when you had to comb through newspapers to find movie theater listings, but it was real and it was hard.) For Jarecki, KnowMe is similar: It simplifies video
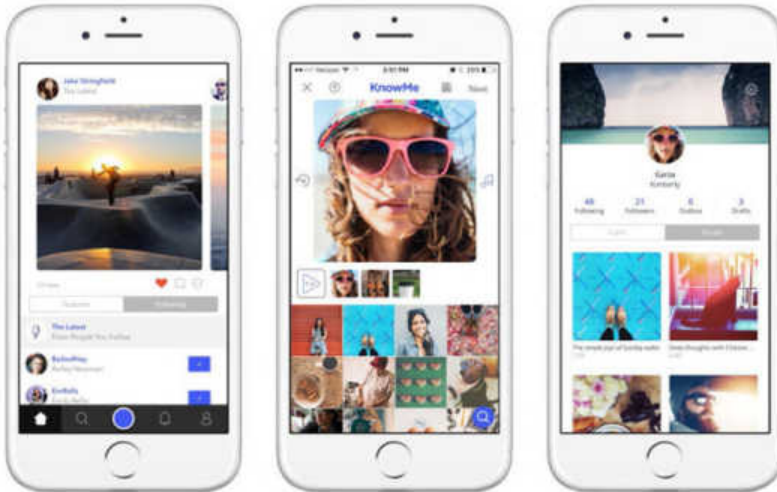
editing, finding the editorial middle ground between Vine/Instagram/Snapchat and iMovie/Final Cut Pro.

KnowMe has been in beta for about a year, with a few hundred testers using the app to create all kinds of mini-videos, which are capped at three minutes. The app features interesting riffs from celebrities like Mike Myers and Sean Hayes, and some Vine-like comedy videos that are pretty hilarious, but there are also really earnest videos. Jarecki showed me one created by a teenager from Switzerland reacting to news of Freddie Gray's death in Baltimore, complete with Google maps tracing the police van's circuitous route to the police station. Like Vine, Instagram, and even YouTube, the creative potential for KnowMe is as big as its

user base. Here's a silly example.

KnowMe is far from the first video-editing app in the App Store, but Jarecki thinks those apps emphasize technology, like time limits and filters, over creativity. Building KnowMe into the next great video app, one that has more editorial sensibilities than the rest, is his full-time job.

"I already had a business and sold it. I'm not trying to make money. I'm trying to make a dent. I'm trying to make things easier for people...to give the tools available to me as a filmmaker to people who don't have these resources," Jarecki told me. "If we strike a cord here it'll be because we figured out a way to balance the storytelling and technology in a way that's accessible to people." ∎

You might know **Joshua**.
He loves video games, and he
owns enough to know they're not
all meant for kids. That's why he
reminds his friends (at least the
ones that have kids) that they all
have **big black letters on the box**
to help parents find the ones that
are best for their families.

You can learn about those
ratings at **ESRB.org**

Los Angeles, CA

ESRB
ENTERTAINMENT SOFTWARE
RATING BOARD

EARLY CHILDHOOD | EVERYONE | EVERYONE 10+ | TEEN | MATURE 17+ | ADULTS ONLY 18+

Reviews THE LATEST iOS PRODUCTS REVIEWED & RATED

STREAMING MEDIA

VLC FOR APPLE TV: GOODBYE FORMAT WOES

BY JON L. JACOBI

THE APPLE TV is a great networked media player, but it would be greater still if it supported more file types and played from more locations. By locations, I mean over the network from something other than an iTunes server, and—oh, I don't know—an attached USB drive?

Well, there's no help for the latter at the moment, despite the USB-C port on the latest model, but there is a viable and completely free alternative for playing a variety of media types over the network: VLC, or the VideoLan Player.

All Home Videos
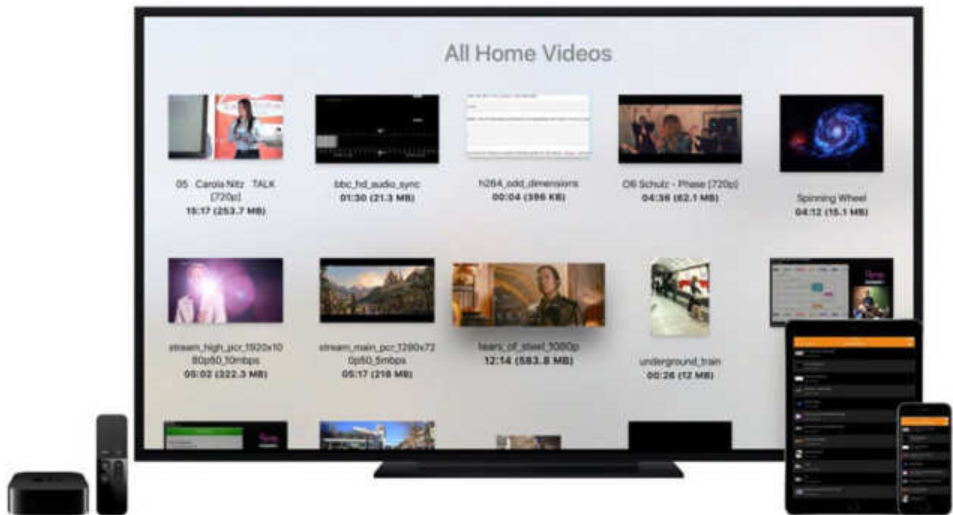
VLC is well known throughout the computing universe. On Windows, it's just one of several options for playing variegated file types. On the Mac and on Linux, the best of very few. On Apple TV it's a welcome addition that obviates the need to pony up cash for anything on the rather abbreviated list of flawed products (Playable, OnePlayer, 8 Player, etc.) and Plex, which requires an account.

Is VLC for Apple TV (called VLC for Mobile in the App store) perfect? No. Does it work? Yes. Quite well. At least with audio and video. In my hands-on, it didn't want to display image files, though it did list them and create thumbnails. I'm thinking that's a bug and expect that it will soon be fixed.

EXCELLENT FORMAT SUPPORT

Audio support was nothing short of fantastic. In addition to the usual M4A, MP3, and WAV support, VLC also played both Apple Lossless and WMA Lossless, APE, FLAC, OGG, and even Opus. It also played 5.1- and 7.1-channel surround sound. Wow.

Video support was almost as good. VLC for Apple TV understands HEVC and UHD (3840 by 2160, or 2160p), but successful playback was limited to 1080 and frames per second to 30 for reasons undetermined.

When working within those limitations, VLC handled MP4, WMV, FLV, OGG, QuickTime, and just about everything else; even some old Real Media formats. That's not surprising as all the versions of VLC use internal codecs for just about everything. The one notable fail was MKV files—one 500MB, the other 30GB. Either it took too long to cache, or there was another issue.

But even MKV played fine when I streamed it to VLC using DLNA. My NAS boxes offer DLNA, and so does Windows Media Player. Files from WMP weren't enumerated perfectly right off the bat, but that might just as easily been WMP as VLC.

INTERFACE

On Apple TV, VLC comes closer to acting as its name implies than on any other system. Rather than simply presenting you with a player, then forcing you through arcane menus to retrieve media from a network resource, it immediately pops up with the local network resources. Cool.

In my case, that's several PCs and Macs, plus three NAS boxes. Yes, I have a lot of stuff. VLC understands the SMB (Server Message Block) networking protocol used by Windows, AFP (Apple File Protocol), and the aforementioned DLNA (Digital Living Network Alliance) media-streaming standard, so any device using those (in other words, just about everything in the universe) will show up. This is all done independently from Apple Home Sharing, which is limited to iTunes instances with it enabled. VLC can also play files stored locally on the Apple TV box.

PERFECTION DEFERRED

Okay, the capabilities are there, and VLC works pretty darn well. It still suffers some of the same minor issues it does on other platforms. First off, I wouldn't exactly call it ugly, but it's certainly not the prettiest child in the Apple app family.

It also had the image display bug I mentioned earlier, and didn't always fail politely on a bad or unknown file. It never hung the unit, as some other players I've tested have, but it would be nice to receive notification that it didn't understand a file rather than the impolitic skip to the next file you do get. I also had some issues with it not re-select-

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VLC FOR MOBILE (APPLE TV VERSION)

★★★★

AT A GLANCE

It's not the prettiest app you'll find in the Apple Store, but there's nothing better when it comes to playing videos and music encoded with atypical codecs.

PROS

• Suports a huge variety of video and audio files

• Relatively stable

• Doesn't cost a dime

CONS

• Some minor bugs in its first release

• Doesn't have the prettiest browsing interface

PRICE

Free

COMPANY

VideoLAN

ing the proper folder in the list; i.e., the one I just exited from.

GET IT

None of those annoyances matter much when all of a sudden your Apple TV box can play virtually any file from any of your devices without any cash outlay on your part. That's a nice upgrade right there. In fact, Apple ought to thank the VLC folks for so drastically expanding the capabilities of its box. Since it probably won't: Thanks VLC folks! ■

THANKS TO VLC, Apple TV now supports nearly every audio and video file format you can find. For free. And from any network device.

iPHONE/iPAD

FORECAST BAR: iOS VERSION OF MAC WEATHER APP IS A BREATH OF FRESH AIR

BY MICHAEL SIMON

FORECAST BAR FOR iOS

PRICE
$2.00

COMPANY
Forecast.io

FORECAST BAR MAY BE THE MOST inevitable app (go.macworld.com/forecastbarios) ever created for the iPhone. When it launched last year for the Mac (go.macworld.com/forecastbar), it brought the flavor of iOS to OS X, putting a sleek weather forecast in your menu bar (hence the name). Everything about it was heavily influenced by iOS, from the at-a-glance interface to the hidden charts and animated icons, and it was refreshing to see a mobile-minded developer bring their vision to the Mac first.

But anyone who used Forecast Bar knew it wouldn't stay locked on

the Mac forever. It would be doing the app a disservice, and besides, weather apps and the iPhone go together like peas and carrots. So when I saw that Real Casual Games had released a version of Forecast Bar in the App Store, I rushed to download it.

Just as I expected, Forecast Bar feels right at home on iOS (despite it not actually being a bar). Launching it brings up a screen that will be instantly familiar to users of its Mac app. At the top you'll find a quick summary of the current conditions—temperature, real-feel, highs and lows, and a brief sentence explaining what to expect over the next hour.
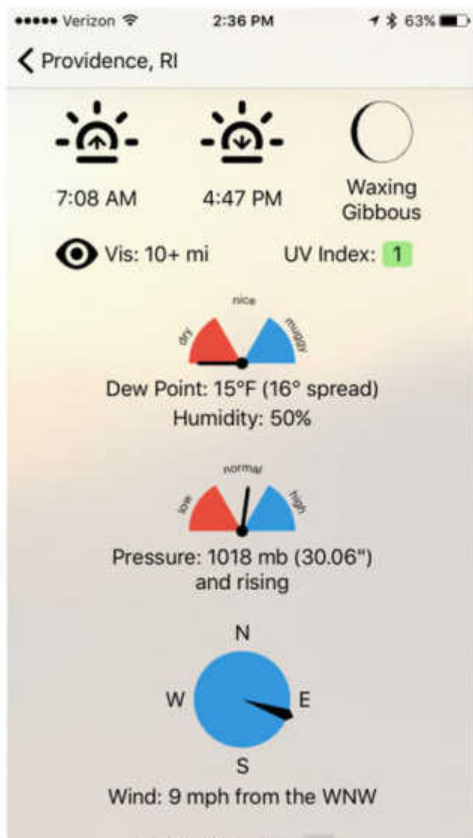
Tapping anywhere within the box leads to a beautiful page with expanded data, including time of daylight, visibility, moon phase, dew point, and humidity. There's a good amount of information here, but Forecast Bar keeps it all under control, utilizing tiny meters to add a bit of visual flair and boost its glance-ability. It's so good, I wish there was a setting to make it the main screen.

Returning to the main page you'll see a seven-day forecast below the today box, with icons and temperatures accompanied by a brief but useful text summary. Tapping on a day expands it to show a chart displaying one of four details: precipitation, wind speed, humidity, or UV index, along with cloud cover and temperature. Once again, Forecast Bar shines here, packing an array of information into a small space without it feeling cramped or cluttered.

RADAR LOVE

Like the Mac app, Forecast Bar for iPhone is powered by Forecast.io, which means it delivers super-accurate data and also features the same gorgeous radar map found in the Dark Sky app. Tap the satellite button in the top right to see a 10-day moving stretch of radiant blues, pinks and yellows. Sadly, you can't span the globe for precipitation without visiting the settings to change your location, but watching storms form and dissipate in a single place is no less mesmerizing.

Equally enthralling is its implementation of Forecast.io's Time Machine feature, allowing you to see the weather on a specific date decades into the past or future. I spent more time browsing past dates than actually checking the forecast, and if you're a weather junkie, it's worth the $2 download for this feature alone.

Inside the settings, Forecast Bar lets you customize things like units, language, and the look of the icons, and while I wouldn't mind things like a dark mode or the ability to change the current conditions image, I was more than content with the options. My only real issue with the app was with the daily summary notification that was supposed to arrive every morning at a time of my choosing. No matter how many times I toggled the "enabled" button or fussed with the notification settings, it refused to appear.

But that was a minor issue compared to the top-notch experience Forecast Bar delivered. If you're a fan of the Mac app, the touch-tooled interface will be a pleasure to use, but even if you're not, Forecast Bar will quickly charm its way into becoming one of your favorite weather apps.

BOTTOM LINE

Forecast Bar on the Mac always had the soul of an iOS app, so it's no surprise that it shines on the iPhone. ■

What's new at the App Store

EXPLODING KITTENS

The $2 Exploding Kittens (go.macworld.com/explodingkittens) "is a local multiplayer card game for people who are into kittens and explosions and laser beams and sometimes goats." (If you've played the physical card game of the same name, you know what's up.) You can play with two to five people on the same network; the game is modeled on Russian Roulette—draw cards until you pick the "Exploding Kitten," at which point you're out

Yousican

Aspiring musicians use Yousican (go.macworld.com/yousican) to learn to play guitar or piano. The app can listen to your performance and offer feedback as you learn to play. The latest update? Add ukelele to the mix.

The Outbound

The Outbound (go.macworld.com/theoutbound) is a free travel app that orients (get it?) you to local outdoor travel adventures—spots to hike, camp, and generally get back to nature, even if you live in the middle of a big city.

Road Watcher

We admit: Sometimes we get stuck in a YouTube spiral, watching Russian dashcam videos. (Don't judge us!) The $1 Road Watcher (go.macworld.com/roadwatcher) is designed to let you prop your iPhone or iPad up on your car's dashboard, and make some movie magic of your own.

Music Memos

Music Memos (go.macworld.com/musicmemos) is a new app from Apple, designed for musicians, meant to help them capture ideas. "Use your iPhone, iPad, or iPod touch to record acoustic guitar, piano, voice, or any musical instrument as high-quality, uncompressed audio. Then name, tag, and rate your ideas to start building a library of all your favorite new song parts and riffs." –JOEL MATHIS

Fashionably charge your phone

This month's roundup features an RFID wallet case from SafeSleeve, a case that glows in the dark, one that lights your selfies, and another with a power crank. Plus a case just for My Little Pony fans.

BY EMANUELA CORSO AND MARCO TABINI

THE WRISTLET

If you're looking for a fashionable way to charge your iPhone while on the go, check out the Wristlet (iPhone 6/6s; $70), a wallet-style case with a 3,500mAh built-in battery designed to double your talking and surfing time. Made of pebbled leather and featuring custom gold hardware accents, the Wristlet (case-mate.com) packs a few card and ID slots, plus a cash compartment. If you don't want to carry the whole wallet with you all the time, the Wristlet includes a detacheable slim case with metal press-through button overlays—just slide your iPhone out of its battery cradle, and you're good to go.

SAFESLEEVE

The SafeSleeve Case (iPhone 6/6s and 6 Plus/6s Plus; $45) (safesleevecases.com) has been designed to absorb and deflect potentially harmful radiation without interfering with your iPhone's signal reception. Available in black, grey, beige, or tan, the folio case comes with an RFID blocking wallet with slots for up to four credit cards, and doubles as a stand in landscape orientation.

Fashionably charge your phone

AMPWARE

When you can't find a power outlet, the AMPware Case (iPhone 6/6s; $79) comes to the rescue to replenish your battery. Currently available for pre-order, the case includes a fold-out handle that you use as a power crank—five minutes' worth of cranking will recharge your iPhone for up to one hour of regular use and up to five hours of standby use. The AMPware Case (getampware.com) features a flexible bumper to prevent damage and comes in three models—Shadow, Sport, and Ranger.

TY-LITE

The Protective Lighted Case (iPhone 6/6s and 6 Plus/6s Plus; $80) features an LED rim that supports three different light settings that help you take better pictures in any environment. The silicone case protects your phone from accidental drops while granting unobstructed access to your iPhone's ports and buttons. Plus, Beyoncé's personal stylist created this case, so you know it's gonna be good.

AURORA WAVE

The Aurora Wave (iPhone 6/6s; $18) sports a glow-in-the-dark coating to help you find your iPhone in any dark place—be it on your nightstand, at the bottom of your purse or backpack, or anywhere else it may be hiding. Available in black, white, blue, or pink, the case features a silicone shell that contours to the iPhone's back and sides for a secure fit, and a raised edge to keep the iPhone's screen safe when placed face-down on flat surfaces.

MY LITTLE PONY

Have any Friendship is Magic fans in your household? The My Little Pony (iPhone 6/6s; $50) is a rubber shell molded after Rainbow Dash, one of the show's main characters. She'll keep your phone safe.

THE COMPLETE, EASY GUIDE TO
BACKING UP YOUR MAC

By Christopher Phin

You know about Time Machine, but there are other ways to back up your Mac. Here's how to pick the best backup method for you.

If, tomorrow, something goes wrong with your Mac or if it gets stolen or damaged, replacing the hardware itself is *technically* very easy to do; it just takes money. But the data that was on its hard disk or SSD—those precious photos, that carefully amassed iTunes library, that work, that novel? The best case scenario is that you pay hundreds, maybe thousands of dollars to a data recovery specialist to try to get some back, and the worst case is that it's gone for good.

And that's why, today, you should back up your Mac. We all know this, but understanding the different ways of backing up, and picking a backup strategy that's right for you—so that you can rest easy knowing that it's extremely unlikely that you'll lose any of your files—can be tricky. At least, it would be, but for this guide!
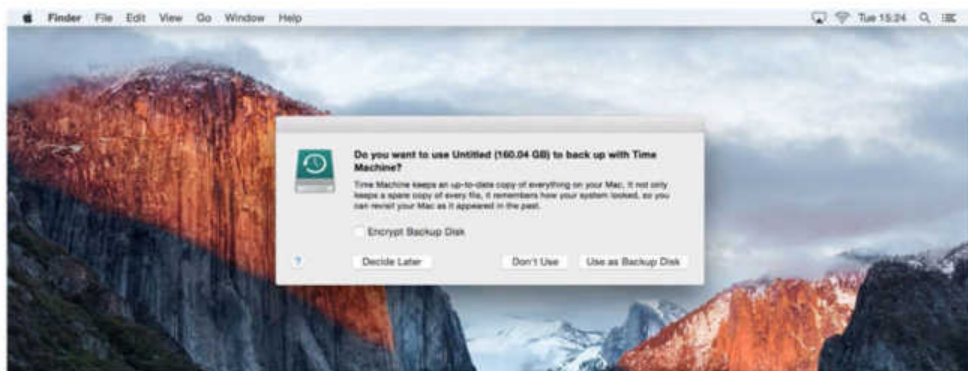
Here we're going to talk you through the pros and cons of different ways you can back up your Mac, giving you the information you need to make an informed decision about protecting your data in the way that suits you best.

But because that detailed information might be a bit intimidating, we're going to start with two simple scenarios: the "if you do nothing else, do this" setup that is easy, cheap, and will give you some basic protection against data loss, and then our recommendation for a good mix of backup methods that should in most situations ensure your data can withstand almost any catastrophe.

If you do nothing else, do this!

Buy a hard disk, plug it into your Mac, and, when prompted to use it for Time Machine backup, accept. If you don't see that prompt, just launch

System Preferences and pick the hard disk in the Time Machine backup pane. (If it's the wrong format, your Mac should offer to reformat it for you; if not, launch Disk Utility, repartition the drive as a single partition using the GUID map, and Mac OS X Extended format.)

We encourage you to read more— to adopt instead our recommended system immediately below, and to discover more about the limitations of this simple backup process in the "Time Machine to a disk connected to your Mac" upcoming section—but don't be put off by all the text that follows. If you stop reading here and do this rather than nothing at all, you've done a good job.

A good, safe backup strategy

To give your data the best chance of surviving a range of problems, and to minimize your down time if disaster

TIME MACHINE COMES with every version of OS X since OS X 10.5.

strikes (which is especially important if you rely on your Mac for your livelihood), you should do three things:

• Back up using Time Machine (to a disk connected to your network for extra convenience, particularly if you use a laptop)

• Clone your hard disk daily to a disk connected to your Mac

• Use a cloud backup or peer-to-peer backup service

By mixing these three strategies, you get file versioning from Time Machine (great if you overwrite or delete something, or want to go back to an earlier draft of a file), the ability to quickly boot from your cloned disk if your internal drive fails (so you can keep working without missing a beat),

and are safeguarded against theft or damage (whether that's something like dropping your MacBook or a more serious disaster such as fire) by having your data also stored elsewhere in the world with a cloud or other remote backup system. Plus, as well as their individual strengths, you also have three copies of your data, which is great if one or more fails. For more on all these as well as some other options, read on.

Time Machine to a disk connected to your Mac

There are other apps that can back up your files to an external hard disk, but Time Machine is simple, built in, sure to be supported, and offers file

versioning as well as simple backup; that is, older copies of your files are stored alongside the current one so that you don't have to restore the most recent version, but can step back through time to grab older drafts. For this reason it's a good idea to buy a hard disk that's two or more times the size of your internal drive— so you have space to store lots of versions. (It's all handled automatically for you.) Hard disks are cheap— a little over a hundred bucks for a 4TB drive, at this writing—but if you have a laptop with an SD card slot you could also consider fitting an SD card (even a Micro SD card inside a Nifty MiniDrive (minidrive.bynifty.com) so that it's nice and flush) to use as your Time Machine drive for extra convenience.

And certainly, if you're using Time Machine on a laptop with a physically connected disk, consider those smaller disks based on 2.5-inch mechanisms rather than 3.5-inch desktop drives; they're usually more expensive per gigabyte, but they're "bus-powered," drawing the power they need through the USB port rather than requiring a separate power supply, all of which means

TIME MACHINE CAN BE used with a network-attached storage device.

you're more likely to plug the disk in and actually back up.

Good because: Set-it-and-forget-it easy, cheap, built in, likely to be supported for a long time. Takes a snapshot of your files every hour, and makes it easy to retrieve deleted and overwritten files with its versioning feature. Can also be used to restore an entire system.

But be aware that: You need to have the disk connected for backups to happen (fine on a desktop, but not guaranteed with a laptop), it's slow to restore from if you replace a failed internal hard disk (you can't boot from it), and it offers no protection against theft or local disasters such as fire.

Time Machine to a disk connected to your network

Alternatively, you can use Time Machine to back up to a disk that is connected directly to your network rather than to a specific Mac. This means it's available to all the computers on your network so you can have them backing up centrally, and best of all, they back up completely automatically over the network every hour

(either via Wi-Fi or ethernet, depending on how they connect to it). This is great for laptops especially: now you don't have to remember to connect your backup disk; it just does it automatically whenever the Mac is awake.

Most people will think of Apple's Time Capsule (apple.com/airport-time-capsule) for this method—a network router with a built-in hard disk—and indeed it's the simplest option, but you don't have to go with that. Plugging a hard disk into an AirPort Extreme's USB port will make it available on the network for Time Machine, and lots of other Network-Attached Storage (NAS) devices from companies other than Apple also support Time Machine backup. Indeed, they can offer other features besides; see the "Fire- and water-proof disks" section.

Good because: All the advantages of Time Machine, but more convenient, especially for laptop users, since backups happen automatically over your home network.

But be aware that: Backups are a little slower (or indeed can be much slower, depending on the speed of your network or the bandwidth of the method by which your Macs connect to it) and restoring is even slower still. You have to be connected to your home network. A little extra complexity. And no protection against theft or other local disasters.

Cloning your disk to another connected to your Mac

Apps such as SuperDuper! (go.macworld.com/superduper) and Carbon Copy Cloner (bombich.com) let you mirror the contents of your internal disk to an external drive, and can set schedules so that this happens, say, daily at 3 a.m. so that it's not getting in the way of your work.

If your internal disk fails, you can just boot from the external clone and continue as if nothing had changed. Obviously, you don't want to rely on this solely, or be doing it for long; it might be slow, and it means you're a level of redundancy down, so that if the external clone fails, you're in big trouble. But you can't beat it as a way to keep you running while you get the internal fixed.

Connect a cheap little hard disk, tuck it out of the way, and just let your Mac clone to it daily. In one scenario, the disk is connected to the USB hub in an Apple Cinema Display, and kept out of sight in a TwelveSouth HiRise (go.macworld.com/twelvesouth); this slows it down

> IF YOUR INTERNAL DISK FAILS, YOU CAN JUST BOOT FROM THE EXTERNAL CLONE AND CONTINUE AS IF NOTHING HAD CHANGED.

to USB 2.0 speeds, but that doesn't really matter, in part because the clone happens at night, but also because after the initial backup, SuperDuper can update only those files that have changed.

If you have a PowerPC Mac and want to be able to boot from your clone, the disk you use for this has to connect using FireWire rather than USB (since PowerPC Macs can't boot from USB).

Technically, you can also clone to a disk image on a network drive rather than to a local disk, but while this has merit in edge cases, it's not usually the best option.

Good because: Creates perfect copy of your internal disk, which you can restore from, or, best of all, boot from in an emergency.

But be aware that: There's no versioning, it can be slow depending on the interface, and there's no protection against local disasters.

RAID disks

In picking an external disk to use with Time Machine or cloning (or even for use on a network), the temptation is to pick a cheap, simple hard disk, and though that's fine, you can give yourself some extra protection by choosing a RAID disk.

RAID disks use two or more hard disks inside a single enclosure, and while they can be configured in increasingly complex ways the more disks they have inside them, for our purposes the key thing is that one of these ways is to mirror the contents of one of the internal drives to the other constantly, automatically.

When new data arrives, it's written to both disks at the same time. This provides extra redundancy whether you're backing up to it using Time Machine or a cloning app such as SuperDuper, so that even if your internal drive fails and even if one of the disks inside the RAID fails at the same time, you still have one good copy of your data. Backup is all about mitigating risk, and this is a classic way to do it.

The two disks just appear as a single disk as far as your Mac is concerned, so there's no added complexity.

A quick aside to encourage you to check out the enclosures from Drobo (drobo.com); they don't use traditional RAID systems, but they give the same redundancy benefits, and allow you to mix and match drives and to grow your storage cheaply and organically in a really useful way. Pricey, though.

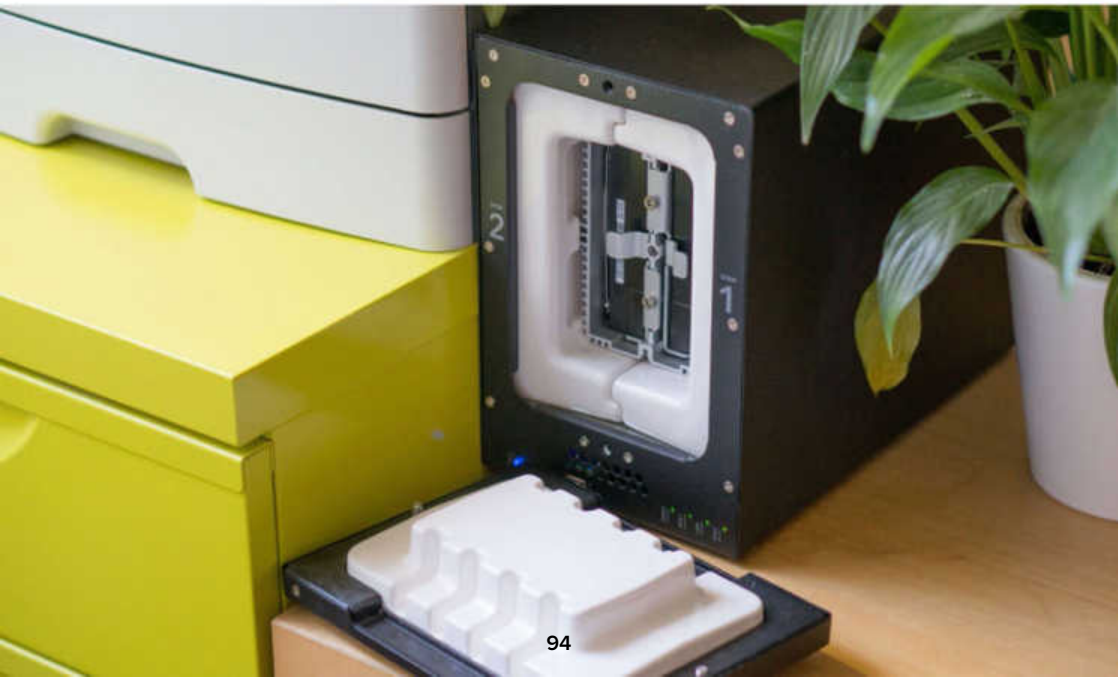**Good because:** Extra redundancy, with no extra complexity.

But be aware that: Obviously, they're more expensive. No protection against local disasters.

Fire- and waterproof disks

Companies such as ioSafe (iosafe. com) make disks that can withstand

fire and flooding, and while these still don't offer you any specific protection against someone breaking into your home and office and stealing your stuff, they at least give some peace of mind by guarding

against local catastrophes—at least for a while. Be sure to check the ratings for what they can withstand.

You can get fire- and waterproof disks that connect to your Mac like any other regular hard disk, and, as above, a NAS—which also works with Time Machine.

Good because: Some protection against local disasters, and can be used for Time Machine (direct or over a network) or cloning.

But be aware that: They tend to be bulky and cost a little more. No specific protection against theft.

Cloud backup

Services such as CrashPlan (go. macworld.com/code42crashplan), Backblaze (backblaze.com) and Livedrive (livedrive.com) let you send your files to their servers over the
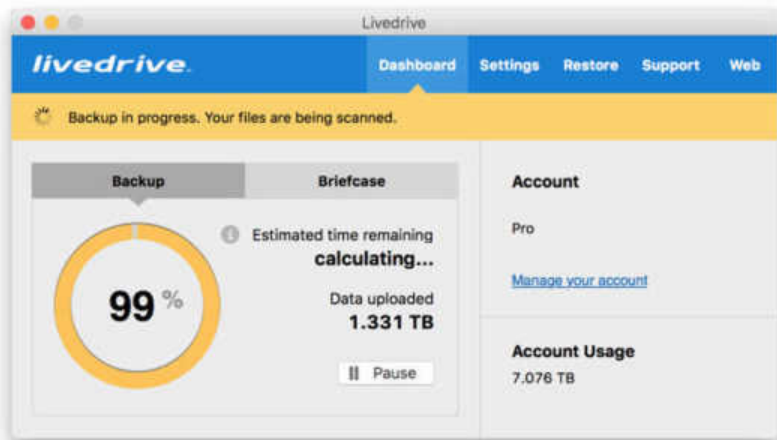
Internet, for a fee. If you do this, then your Mac and any local backups you have on the premises next to it can be stolen, smashed, burned or drowned, but there's a copy of your data held in a remote location, in a facility that is usually itself secure and which has good data redundancy.

Don't confuse this with services such as Dropbox, which, while they do broadly the same thing at a technical level, are only designed for tiny subsets of your data, not the whole lot—and it'd be just your luck if you haven't put the thing you want in the safe directory to be backed up.

Good because: All your data gets sent away to a secure location, so is protected from theft and local disasters. Happens all the time you have an Internet connection (so great if you travel for business), rather than

LIVEDRIVE, AN ONLINE backup service.

95

requiring you to be on your home network as with a Time Capsule, say. Sometimes some versioning.

But be aware that: Takes a long time to complete the initial backup on most broadband connections, and could take an impractically long time to restore a full system back again. Unlikely to be an option on a capped or slow connection. Cost can mount up—though do explore "family" plans if you want to get everyone backing up.

Aside: iCloud's backup abilities

iCloud can back up key information—addresses, bookmarks, and keychain items, for example—and also back up your photo library and any documents stored on iCloud Drive. Just be careful: it's easy to misconfigure things and to discover too late that you haven't backed up the things you thought you had. Pay close attention to the iCloud pane of System Preferences; don't just think "I have iCloud" because it doesn't work the same on the Mac as the backup system does on iOS.

Peer-to-peer offsite backup

Rather than paying a company a monthly or annual fee to store your data on its servers, you can get the

main benefits of cloud backup simply by backing up over the Internet to a disk stored at a friend's house. The best-known way to do this is with CrashPlan; install the free app on their computer (where they can define where they want backups to be stored and how much space to allow you) and then on yours, define them as a backup target, and then just let it run. Indeed, you can do the initial backup to a disk connected to your computer first, and then attach it to the computer at your friend's house, to speed up that initial backup process.

Of course, as a courtesy, you probably want both to offer them the option of backing up to you, and also offer them a hard disk so that you're not taking up space on their own internal (or external) drives. This drive could be a RAID or disaster-proofed drive for extra protection.

Your data is encrypted on the backup drive, so even if you don't entirely trust your friend, they can't see what you're backing up!

Good because: Gives you the main benefit of cloud backup—that your data is protected from theft or local disasters—but without the ongoing cost.

But be aware that: Your friend's computer needs to be on for back-

ups to happen, most of the limitations of backing up over the Internet detailed previously still apply, and you have fewer guarantees about your data's safety as you would have with a commercial cloud backup service.

Other backup options

We've detailed the main types of backup that are relevant today; there are others, such as backing up to DVD, using a rotating offsite tape system, and doing smart things with rsync (en.wikipedia.org/wiki/Rsync) to synchronize local and remote directories, but the ones we've talked about are the most useful to most people now.

A last word of advice

Hopefully, then, we've helped you adopt the right backup system for you—or at least, gotten you to plug a sixty-buck hard disk into your Mac for Time Machine—but be careful not to get lulled into a false sense of security. Backup can help mitigate against data loss, and the more backup systems you have running the less chance there is that you'll lose your wedding pictures, your work documents, your homework. Things can still go wrong, though, so be vigilant, and if one of your backup systems (or your Mac) goes awry, fix and replace it as soon as you can to keep up your protection.

Which brings us to our last bit of advice: every so often, do a quick audit to make sure your backup systems are actually running and are backing up as they're supposed to. Set a recurring reminder—weekly, monthly, or quarterly, depending on how conscientious and/or paranoid you are!—to check your backups. ■

WHICH BRINGS US TO OUR LAST BIT OF ADVICE: EVERY SO OFTEN, DO A QUICK AUDIT TO MAKE SURE YOUR BACKUP SYSTEMS ARE ACTUALLY RUNNING AND ARE BACKING UP AS THEY'RE SUPPOSED TO.
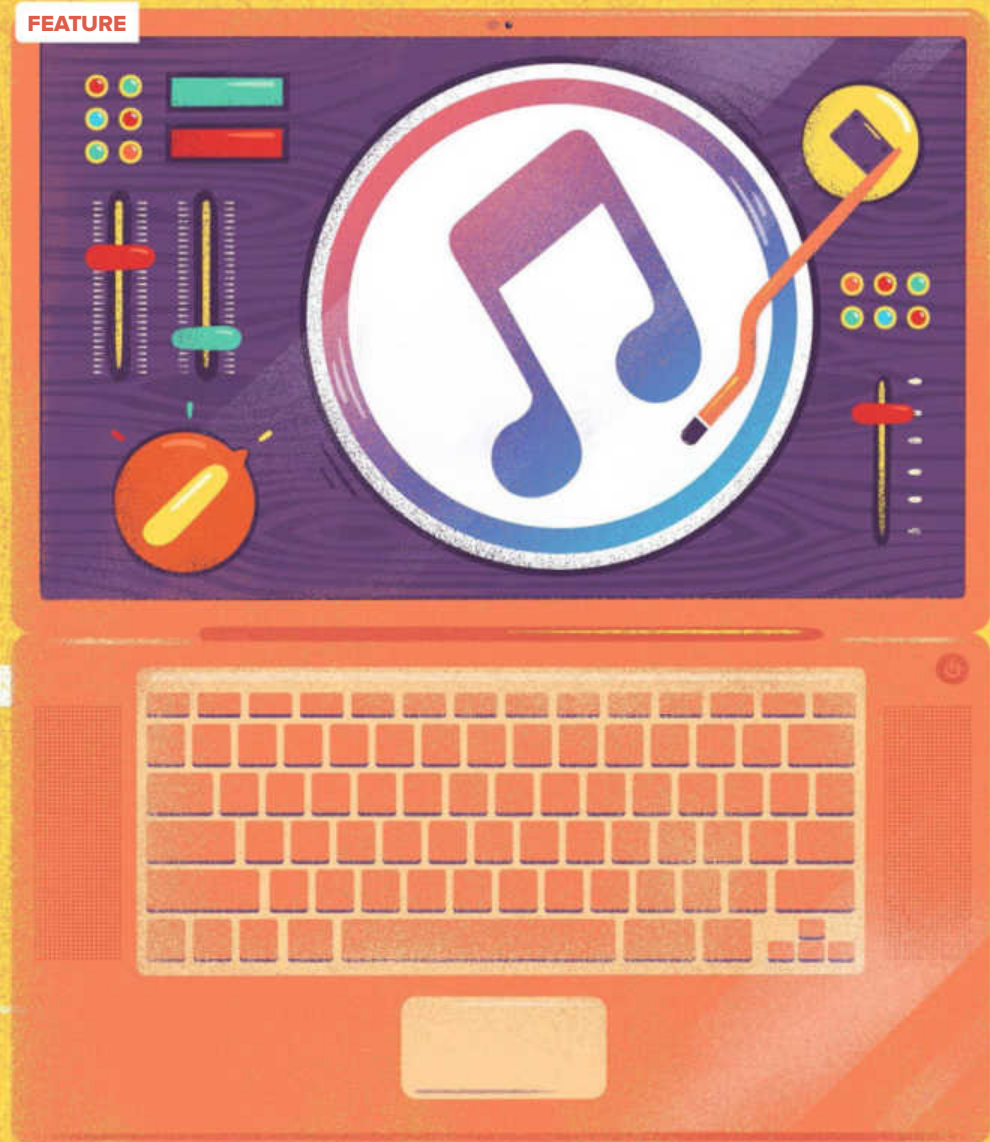
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and most importantly, people like
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cancer at *StandUp2Cancer.org*

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15 YEARS
OF iTUNES

A look at Apple's media
app and its influence on an
industry **By Kirk McElhearn**

On a chilly, rainy day in San Francisco 15 years ago, Steve Jobs took the stage at the 2001 Macworld Expo to present new Apple products. After talking about boring technicalities of new hardware and software, Jobs switched registers. He introduced Apple's digital hub concept, then started talking about a revolution (youtu.be/auXc0 tgdJSo).

"There is a music revolution happening right now."

Jobs discussed the current state of digital music: how people ripped CDs, put music on computers, created playlists, and how people burned those playlists to CDs to listen on the go or in the car. People even copied digital music to MP3 players. Jobs said that music player apps were "too complex. They are really difficult to learn and use."

Jobs then introduced iTunes, arguably the most important software Apple ever released, other than its operating systems. iTunes set the tune for the company's next decade and its rise from a "beleaguered" hardware and software company to the industry leader we know today. Admitting that Apple was playing catch-up, Jobs said, "We're late to this party and we're about to do a leapfrog."

And they sure did.
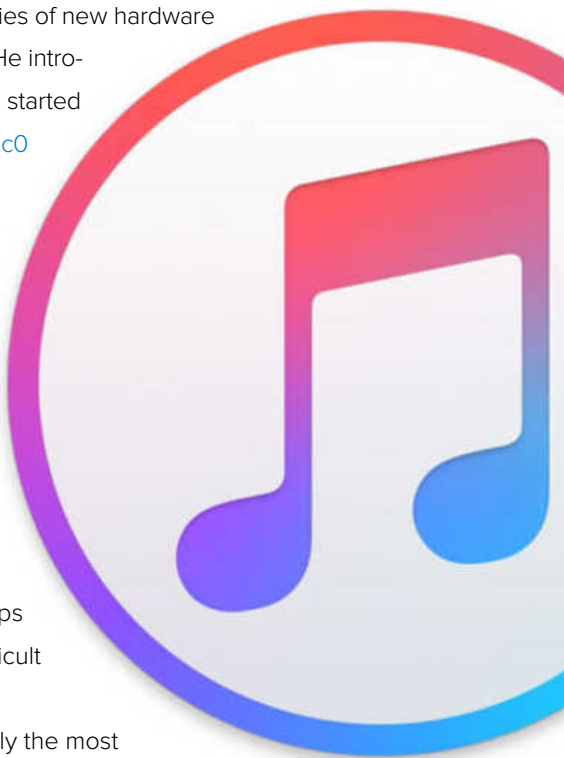
THE ICON of the current version of iTunes, version 12.

iTunes over the years

iTunes made 15 years old last month and its history parallels that of Apple since its release in 2001. In less than a year later (go.macworld.com/ipodbirth), Jobs introduced the iPod (go.mac world.com/ipodintro), the hardware device that, married to iTunes, would turn Apple's fortunes around.

As Apple introduced new iPod models, the company also added new features to iTunes. Version 2 was released to coincide with the iPod's availability; version 3 added smart playlists and support for

audiobooks from Audible.com. In April 2003, iTunes 4 introduced the iTunes Music Store, added support for the AAC codec, and more. Oh, and hell froze over later that year: Apple released a Windows version of iTunes (go.macworld.com/windows itunes), "probably the best Windows app ever written," said Jobs.

Launched with a mere 200,000 songs, the iTunes Music Store sold one million songs in its first week. By June of that year, a million iPods had been sold, and the world was soon rocking to their personal soundtracks while wearing the signature white

earbuds.

iTunes and the iPod made tech cool. Those earbuds were everywhere. Just as headphones marked the first portable music revolution when the Walkman surged in popularity in the early 1980s, the ubiquitous white earbuds bore witness to just how many people wanted to listen to music on the go and did so with Apple products.

In April 2004, an incremental update, iTunes 4.5, saw some new features: the now-defunct iMix, the once useful party shuffle, and more. Through the life of iTunes 4, other enhancements included AirTunes— the predecessor of today's AirPlay— to stream music over a local network, support for photos, and support for video. In June 2005, Apple added podcast support; together with a huge podcast directory in a section of the iTunes Music Store, it helped spearhead a revolution in that nascent media.

iTunes 5 and 6, released from September 2005 through June 2006,

PARTY SHUFFLE
in iTunes 7.

didn't add many new features to the app, focusing more on compatibility, bug fixes, and minor enhancements. It did see the addition of video when the 5th generation iPod classic was released in October 2005, but it was iTunes 7, which lasted nearly two years—September 2006 through September 2008—that saw major new features. There were iPod games (remember them?), gapless playback was added (finally), Cover Flow (now retired), and support, in early 2007, for the new Apple TV.

iTunes' progression mirrored that of digital media in general. At first it was about music and nothing more; the "tunes" in iTunes. But as digital technologies improved, and hardware grew new capabilities, iTunes shepherded different types of digital content to portable devices. Photos, videos, and later apps, all made the leap from the desktop to pocket-sized devices through iTunes. For years, Apple's new product presentations focused on the iPod and digital music, with the rest of the company's hardware being secondary. The company lived and breathed iPod, as Apple's market share crushed its competitors.

In February 2007, Jobs penned an essay entitled Thoughts on Music, curiously only available now on Apple's Korean website (go.mac world.com/musicthoughts), which would change the music industry forever. In it, Jobs bemoaned the use of DRM (digital rights management) on music downloads and offered alternatives. In May of that year, the iTunes Store introduced iTunes Plus, which was 256 kbps DRM free music, sold at a slight premium, allowing interoperability with other software and hardware. By then, the iTunes juggernaut was unstoppable and Apple could influence the way the music industry sold its products. Digital music sales soon eschewed

> But as digital technologies improved, and hardware grew new capabilities, iTunes shepherded different types of digital content to portable devices.

DRM entirely.

2007 was, of course, the year of the first iPhone. Still linked to iTunes, this device became the hardware equivalent of that media management app, turning Apple into the biggest tech company of all time. By then, iTunes supported a full line of portable devices: the iPod classic, touch, nano, shuffle, and the iPhone. (And it also synced to the Apple TV, then a hard-disk based device.) And it added the App Store, whose

Bang On A Can

Music for Airports
Bang On A Can

Name	Time	Rating	Artist	Album		Play Count	Last Pla
1/1	16:29		Bang On A Can	Music for Airports			
1-2 (Eno)	8:51		Bang On A Can	Music For Airports			
2/1 (Eno)	11:36		Bang On A Can	Music For Airports			
2/2 (Eno)	11:59		Bang On A Can	Music For Airports			
Or Are You Just A Technician	0:57		The Durutti Column	A Paean To Wilson			
Chant	10:34		The Durutti Column	A Paean To Wilson			
Quatro	3:21		The Durutti Column	A Paean To Wilson			
Requiem	8:07		The Durutti Column	A Paean To Wilson			
Stuki	7:11		The Durutti Column	A Paean To Wilson			
Along Came Poppy	4:20		The Durutti Column	A Paean To Wilson			
Brother	8:36		The Durutti Column	A Paean To Wilson			
Duet With Piano	3:17		The Durutti Column	A Paean To Wilson			
Darkness Here	2:29		The Durutti Column	A Paean To Wilson			
Catos Revisited	8:24		The Durutti Column	A Paean To Wilson			
The Truth	4:12		The Durutti Column	A Paean To Wilson			

218 songs, 1.01.39.15 total time, 2.13 GB

success is lauded regularly (go.macworld.com/appstoresuccess), and which has helped contribute to the popularity of the iPhone.

iTunes 8 and 9 moved ahead, consolidating Apple's overall digital strategy. You could rent movies and TV shows, then buy movies and TV shows, you could download courses from iTunes U, and buy ebooks. iTunes added and refined more features: Genius Mixes and Home Sharing were added, and Party Shuffle morphed into iTunes DJ (since removed, and replaced by the confusing Up Next).

Introducing complexity

During the initial iTunes introduction, Jobs said of the music apps that existed at the time: "They are too complex. They are really difficult to learn and use." iTunes was becoming a confusing amalgam of features that no longer seemed organic and felt like they were cobbled together haphazardly. Apple added such features—later retired—as the Genius sidebar and the iTunes MiniStore, which didn't make it easier to find

COVER FLOW
view in iTunes 9.

and listen to music, but tried to funnel users into the iTunes Store to get them to buy music.

The epitome of this marketing-led design was the fatal introduction, with iTunes 10, of Ping, a "social network for music," which prompted me to write (go.macworld.com/ping) at the time, "I'm sure Apple has a plan, but so far, users seem to be greeting Ping with a big shrug. I know I have." Ping didn't last long (go.macworld.com/pingproblems); in October, 2010, it was replaced by the iTunes Sidebar (go.macworld.com/

itunessidebar), which, just as the Ping sidebar, was short-lived.

In 2011, iTunes Match came into existence, yet never spread beyond the US, Canada, and Australia. And in the following year, iTunes 11 added iTunes in the Cloud, for purchased content, and also made major changes in iTunes' interface, confusing users. iTunes Radio was introduced, and the two-year life of this version of iTunes saw a lot of fixes and minor enchantments, but nothing that made the program easier to use. When iTunes 12 saw the light in

iTUNES 10 and the short-lived Ping. This was also when Apple made the iTunes sidebar a drab, uniform gray.
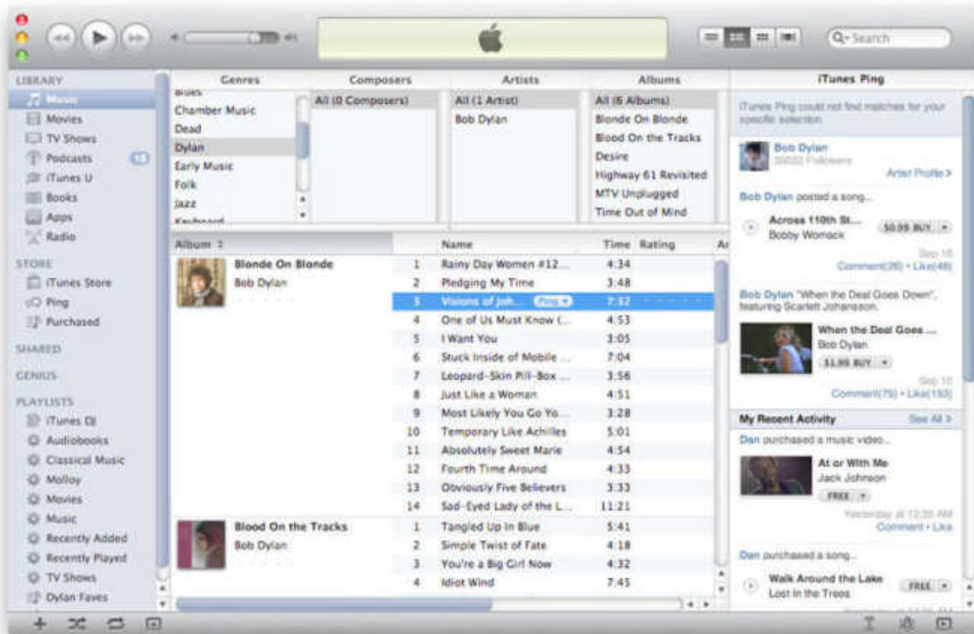
October 2014, Apple again pulled the rug out from under users, changing navigation within the app and making it even harder to find one's way through a labyrinth of features.

As we now know, the next step in digital music is streaming, and iTunes 12 embraced that in 2015 with Apple Music and the iCloud Music Library, which is the bane of people with carefully curated music libraries (go.macworld.com/icloudmusic). And there's no escaping the iTunes Store; it's permanently baked into every nook and cranny of the app.

iTunes initially came into existence because of "a music revolution" guided by Steve Jobs, who, as we know, loved music. Over the years, as digital content matured, iTunes became the hub for all that content. That's not a bad thing in and of itself; lots of people love to call iTunes "bloated," but I disagree (go.macworld.com/itunesbloat). The problem now is that those who want to use iTunes for its original purpose, music, find themselves stuck in a morass of features designed to sell, sell, sell product from the iTunes Store.

In my writings about iTunes—notably my Ask the iTunes Guy column (go.macworld.com/itunesguy)—I field questions from users perplexed by the quirks of this app. I used to get questions asking how to do something more efficiently, and I was able to help people organize and manage their music creatively. Now, most of the ques-

> iTunes initially came into existence because of "a music revolution" guided by Steve Jobs, who, as we know, loved music.

tions I get are about trying to work around things that are broken, or how to find features that were once easily accessible. More and more users long for a simple music player that sheds much of the cruft that has built up over the years.

Apple's press release for iTunes 1.0 said:

"iTunes is miles ahead of every other jukebox application, and we hope its dramatically simpler user interface will bring even more people into the digital music revolution."

If only that were true now. ■

4 reasons why you should run your own Mac server, and 4 reasons why you shouldn't

Running a Mac server isn't for everyone, but it can be useful. We break down the reasons why you should consider it, and why you should skip it.

BY JASON SNELL

think I've had a Mac running as a server in my house continuously for nearly 20 years. Over the years, the hardware has changed—at least four times, so far as I can remember—and the tasks required of it have changed dramatically, too. But despite all that change, the presence of a server in my house has always been useful.

Then again, running a Mac server isn't for everyone—and these days, network-attached storage (NAS) devices can provide most of the functionality of a computer at a lower cost and reduced complexity. What I'm saying is, it's complicated.

WHY HAVE A HOME SERVER?

It can be very convenient to have a computer that's always available. Let's say you have a large collection of media files—music or videos—that you want to have available to play on your stereo or TV.

If there's a big enough disk attached to that computer, it can also be the place you stash old files—especially if you're using a newer Mac that's got a smaller flash drive rather than a bigger spinning disk drive.

And if you use an online backup service, such as CrashPlan or Backblaze, you can back up that Mac and all of your precious files will be backed up, too.

THIS OLD Mac mini could become your new server.

Finally, if your home Internet service is slow, spotty, or metered, having a home server allows you to stock up on content—especially music and movies—and have them available to watch on a moment's notice. Not everyone can stream HD movies with impunity.

REASONS TO USE A MAC SERVER

Familiarity: If you're a Mac user, you know how to use a Mac. You probably know how to share files and folders, run iTunes, the works. A NAS doesn't run OS X. You have to administer it from a webpage, and if there's trouble, you will be entering a world of troubleshooting that can get alien and frustrating in a hurry.

Availability: One of the best sources of Mac server hardware is an old Mac you already own. My first two Mac servers were both hand-me-down Power Macs. Once I got a fresher model, the old one went in the closet and served me for a few more years as my server. You can put an old iMac, Mac mini, or even laptop into service as a server with little or no financial investment.

Compatibility: If you want to serve protected iTunes content—TV shows and movies—to Macs, iOS devices, or an Apple TV, a Mac running iTunes somewhere on your network is the only official way to do that. Also, a lot

of software and hardware is designed to work with computers, not storage devices.

Flexibility: Apple is constantly upgrading OS X, and most modern hardware comes along for the ride. Apps are constantly being updated to take advantage of new features. My home weather station came with some weird Java-based software that was never updated and worked horribly; I was able to easily replace it with a much better piece of native Mac software.

An embedded system like a NAS is harder to update and can be abandoned by its makers after a short time in favor of newer models.

REASONS NOT TO USE A MAC SERVER

Price: You can get an impressively specced two-disk Synology array from Amazon for $263, for example.

A four-disk model is $450. That's cheaper than the cheapest Mac. If you don't have a Mac appropriate to be tasked as a server, you can save a lot of money by just buying a NAS.

Energy: Running a Mac server all the time, especially if it's attached to external hard drives, can use a lot of power. Most modern NAS devices are designed to be power efficient. I haven't measured, but I'd imagine that I would use a lot less energy if I dumped my Drobo and Mac mini duo and replaced it with a single low-power NAS.

An extra device: If you've got a Mac you tend to use most of the time, you could make it your "household server" by leaving it on all the time, rather than dedicating an additional device. Or just remember to turn it on when you want to watch videos or listen to music.

More junk: You can run a Mac without any keyboard or monitor attached, in which case your server can take up very little space. But if you've got, say, an iMac, you're stuck with the big screen. You've got to stick it somewhere, and it's just another thing cluttering up your house.

All in all, I'm glad I've got a Mac server in my house. If I were starting from scratch today, I might consider a NAS—but I suspect that it wouldn't be compatible with everything I use my Mac for, especially connecting to my home weather station (go.macworld.com/homeweather). Either way, it's awfully convenient to keep a server around—which is why, 20 years after I started, I've still got one. ◾

How to collaborate on documents using iWork and iCloud.com

You can use Pages, Numbers, and Keynote to create documents with your friends, family, or coworkers. Here's how to get started.

BY KIRK McELHEARN

When you want to collaborate with someone on a document or project, Apple's iCloud.com offers collaboration features that can make it easy to work with others. Whether you just want friends or colleagues to make comments on your documents, or whether you are creating documents with others, you can use Apple's iWork (apple.com/iwork-for-icloud) apps (Pages, Numbers, and Keynote) and iCloud.com to streamline this process.

Here's a look at how you can collaborate with iCloud.com, the features it offers, and what's missing.

GETTING DOCUMENTS INTO THE CLOUD

When you create iWork documents, you can store them on iCloud Drive (apple.com/icloud/icloud-drive). Once your documents are in the cloud, you can share them with others on iCloud.com. To use iCloud Drive, you need at least iOS 8 or OS X Mavericks.

On a Mac, you turn on iCloud Drive in System Preferences ➔ iCloud. On iOS, it's in Settings ➔ iCloud. Once you have enabled iCloud Drive, you can store documents you create with the iWork apps, as well as other apps that support that feature. (Only iOS apps and OS X apps sold through the Mac App Store can use this feature.)

By default, you get 5GB free storage on iCloud, which you can use to store your documents, photos, email, and iOS device backups. If you plan to use iCloud Drive a lot, consider upgrading to a more capacious plan. For example, you can boost your storage to 50GB for $1 a month, and you can get as much as 1TB of iCloud storage (that's $10 a month).

When you create documents in iWork apps on iOS, you have to save them to iCloud; when you create a document in an iWork app on OS X, you can choose to save it locally or in iCloud Drive. You probably don't need to save all the documents you create on your Mac in the cloud; save those that you want to share, or that you want to be able to access on other devices.

SHARING DOCUMENTS

Once you've saved a document on iCloud Drive, you can share it with a friend or colleague. In Pages, Numbers, or Keynote, choose Share ➜ Share Link Via iCloud, or click the Share button in the toolbar. You can choose to allow the person you share the document with to edit the document, or, if you only want them to see the document and not make changes, choose Read Only from the Permissions menu. You can protect the document by clicking Add Password and setting a password; you'll need to communicate that to the other person securely. (The best way may be over the telephone or FaceTime.)

Next, choose how to invite the other person to access your docu-

ment. You can do this via Mail, Messages, Twitter, Facebook, or other means, or you can just copy a link and send it yourself. You might want to do the latter if you communicate with others via Slack or a similar collaboration tool. Click Share Document, and enter the email address, or other information needed, to share it.

When your collaborator receives a link to a document, they click it to view the document on iCloud.com. They don't need an iCloud account and they can access the document in any web browser, even on Windows or Android. They enter their name (so you can follow the changes they make) and can edit your document if you've allowed them to do so. If not, they can simply view it.
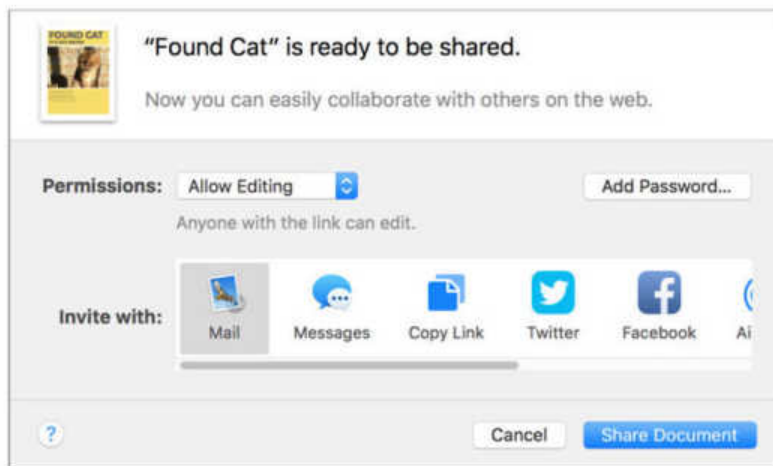
SEND OUT AN invitation to share a document.

WORKING TOGETHER

If you've allowed a collaborator to edit your document, then the changes they make update in the app you're using if you have the document open. For example, if you've created a spreadsheet in Numbers and a colleague edits it on the web, your document updates automatically. This doesn't happen in real time, but takes a few seconds for changes to appear.

It's better to make changes in the iCloud.com web interface. You'll see a cursor when a collaborator is editing a document, and if you click the user icon in the iCloud.com toolbar you can click on a user's name and see which sections they've changed. However, once changes are made, you can't see the exact changes. If you click a user's name in the user pop-up, you may see the section they edited—this isn't always the case—but not their exact changes.

Sometimes, two or more people will make changes at the same time. Or you'll make a change locally in Pages, Numbers, or Keynote and a collaborator will make an edit on iCloud.com. When this happens, you will both see a dialog saying that the documents are out of sync, and the users who are invited to edit the document will be prevented from editing anything. It's up to the document's owner to decide which

version to keep—you can keep both, if you want, to review them later—but, again, you can't compare the changes. You only see the date and time of the versions and where they were updated (iCloud .com or a specific computer). It's best for the document's creator and owner to ensure that people don't simultaneously edit documents, which, of course, limits the usefulness of this feature.

You can browse a version history—click the Tools icon (the wrench), and then choose Browse All Versions—but you can only restore different versions entirely, not view them to compare them with your original or final document. If you're used to change tracking in Microsoft Office apps or ever Google Docs, you'll be disappointed by the way this feature works with iWork apps.

You can, however, browse versions on a Mac. In your iWork application with a shared document open, choose File ➤ Revert To ➤ Browse All
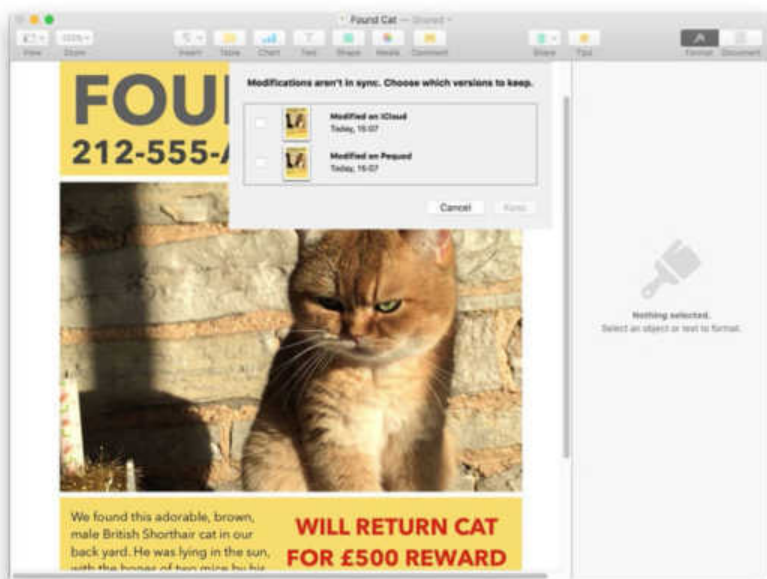
Versions. You'll see your current version to the left, and older versions to the right. These may be different versions containing only your additions and edits or versions edited on iCloud.com. You can navigate through these versions as you would when viewing locally saved versions (go.macworld.com/locallysaved). Some of these versions may be in the cloud; in this case, they display a cloud icon followed by the text Load This Version. Click the text to download and view the version, and then compare it to your final document. You can restore any of these versions, or note changes made and then apply them to your document.

IF CHANGES ARE MADE by more than one person, you'll be alerted, either in the app (here, Pages), or in the web interface on iCloud.com.
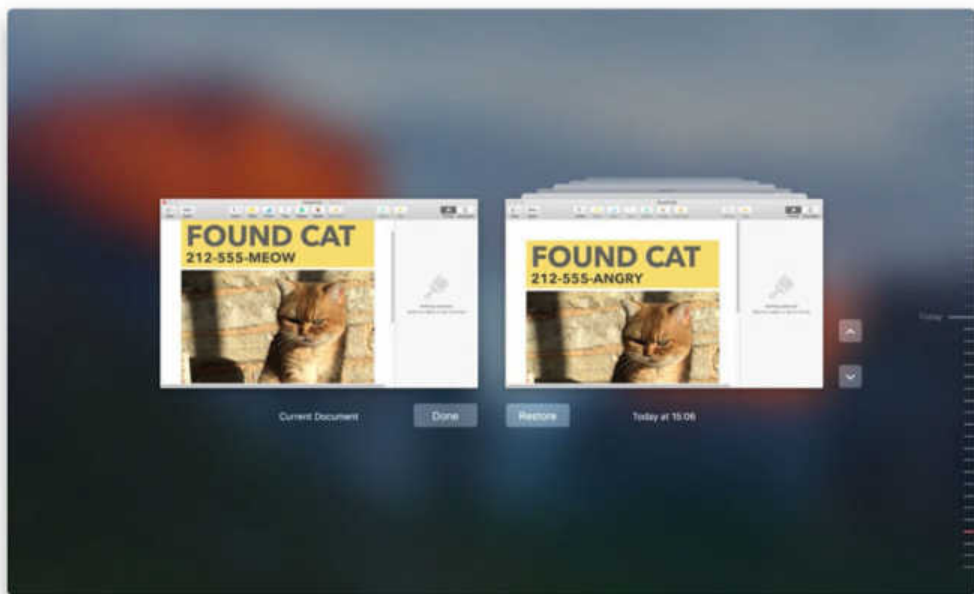
While iWork's collaboration features are interesting, their weaknesses make them useful only for the most basic editing and changes. iCloud.com really needs proper change tracking for these collaboration features to be fully usable.

They're a great way to let someone view a document, especially if they don't have a Mac, but the lack of actual change tracking means that you won't see enough precise information about edits. ∎

YOU CAN BROWSE versions on a Mac and compare them, but changes aren't tracked or highlighted.

How to adjust your Mac display's resolution settings

The lowdown on how resolution settings work on the Mac.

BY KIRK McELHEARN

Macs ship with the display set at a certain resolution, and Apple defines this in the technical specifications for each model. But with Retina displays, these numbers can get confusing: there is the display's resolution and the "looks like" resolution used on the Mac. Resolutions on Retina Macs look like half the actual number of pixels measured vertically and horizontally because of "pixel doubling."

For example, if you have (as I do) a 5K iMac, the display resolution is 5120x2880, but the Displays pane of System Preferences tells me that it looks like 2560x1440.

That's the default resolution, but you can change this if you want. To do so, you must first select Scaled in the Displays pane, as I have in the screenshot here, and you then see five options. These range from Larger Text to More Space, with the Default setting in the middle.

If you have aging eyes or just want to see less on your display, try one of the settings to the left of the Default option. If you want to see more on the display—with smaller fonts, menus, etc.—then try one of the settings to the right. When you hover over one of these options, the Displays pane shows text saying that "Using a scaled resolution may affect performance." This is because your graphics card might not be able to

keep up with a higher resolution (i.e., when things look smaller), or that some of your apps may not display correctly.

The 13-inch Retina MacBook Pro has a native resolution of 2560x1600 and uses a default "looks like" resolution of 1280x800. Things are a bit different with Apple's 12-inch Retina MacBook. Its display has a resolution of 2304x1440, but the default "looks like" resolution it uses is not half that, but a bit more: 1280x800, just like the

THE DISPLAYS PANE of System Preferences offers a choice of display resolutions.

13-inch MacBook Pro. So it looks like the same number of pixels, but on a display that's one inch smaller diagonally. Naturally, these laptops offer other scaled options; each lets you choose from a total of four resolutions, from 1024x640 to 1440x900 (12-inch MacBook) or 1680x1050 (13-inch MacBook Pro).

If you have a second display connected to your Mac, you can choose a resolution for that display, also from the Displays pane of System Preferences. Select the display in the preference pane's pop-up menu, then hold down the Option key and click the Scaled button to see your options.

EVEN MORE RESOLUTIONS

Maybe you want even more choice in the resolution of your display. If so, you can use Many Tricks' $3 Resolutionator (manytricks.com/resolutionator). This utility lets you quickly switch resolutions without going to System Preferences, but also lets you choose from non-Retina resolutions. For example, in the screenshot below, you can see the options available on my 12-inch MacBook. I could choose to set its display to 2560x1600; that's not the resolution that *looks like* half that, which is the default, but a resolution that actually uses every pixel of the display.

Naturally, things are quite small at
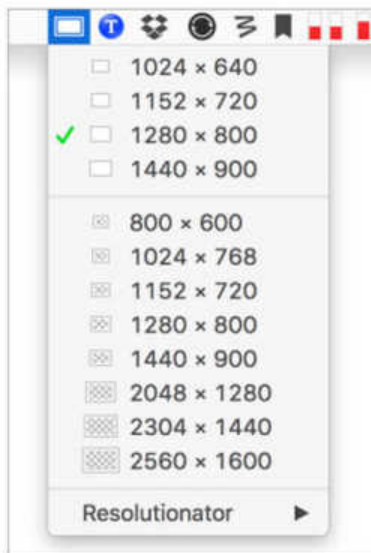
RESOLUTIONATOR OFFERS a wider range of resolutions, and also lets you switch quickly from the menu bar, or using a keyboard shortcut.

that resolution, so you probably won't want to do this often, but there may be times when you want to keep your eye on several windows at a time, and only a high resolution like that will work.

When I work on my MacBook, I sometimes switch resolutions. When I'm focusing on writing, I use the native resolution, which makes texts large enough that I don't need to strain, but if I have a lot of windows open, I sometimes go to a higher resolution to get a broader view of what I'm doing. Try changing resolutions on your Mac; you may find that it's easier to read texts, or that you can see more, than at the default resolution. ■

PEACE CORPS
RESPONSE

3-12 MONTHS CAN MAKE A LIFETIME OF DIFFERENCE

Peace Corps now offers short-term Volunteer assignments overseas for 3 months to 1 year for especially skilled professionals with at least 10 years experience.
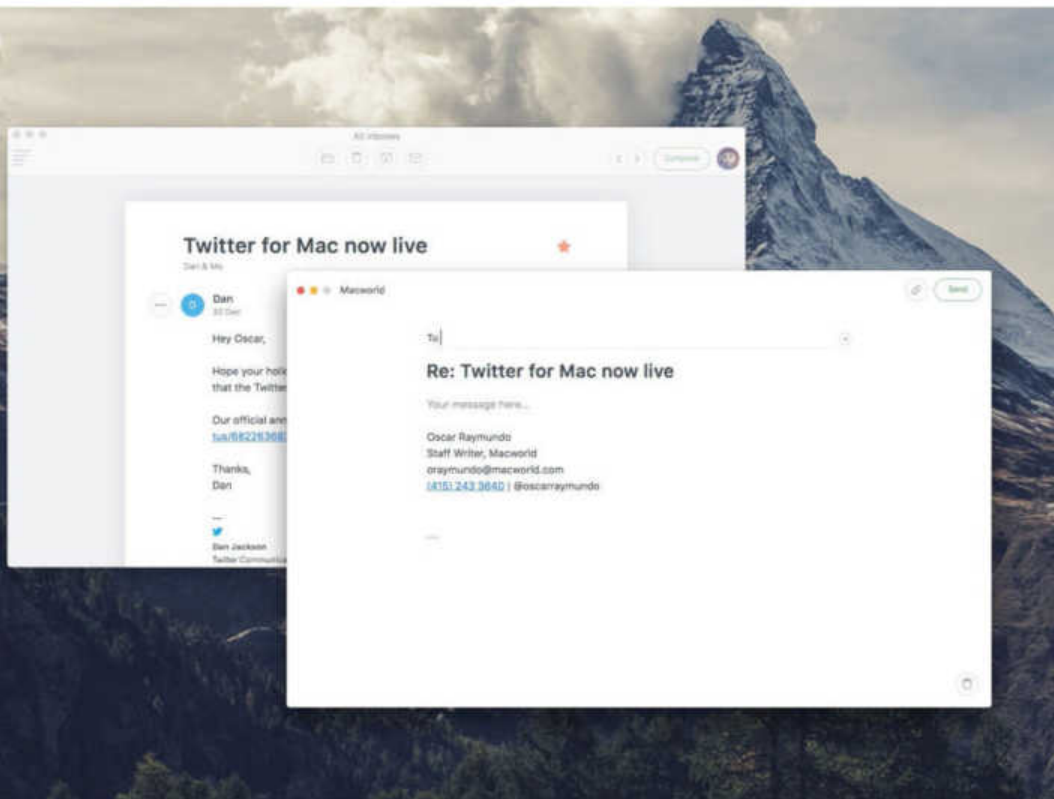
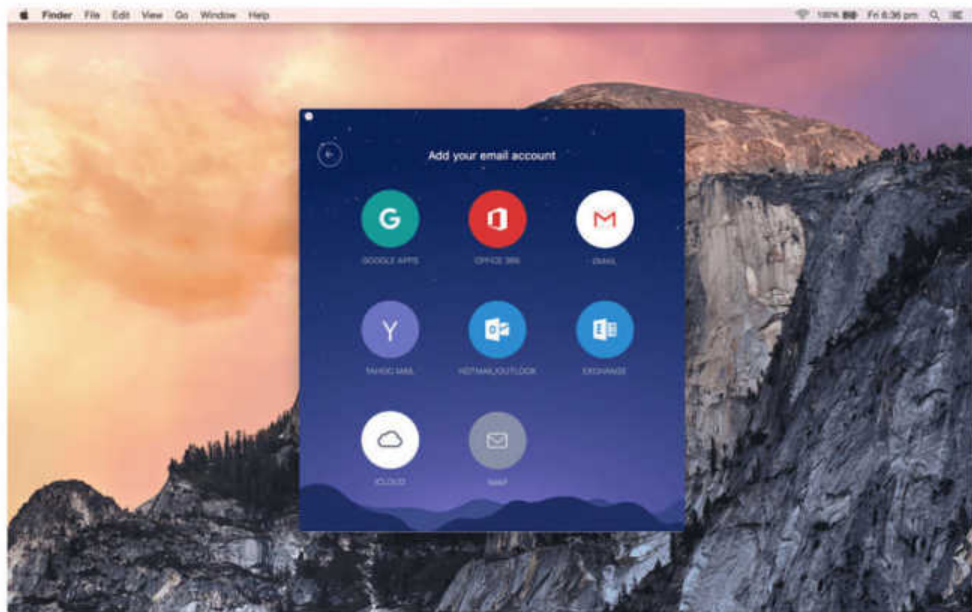Browse the opportunities on our website and register to receive alerts when new postings become available.

peacecorps.gov/response

Hands-on: CloudMagic for Mac brings effortless focus to your email

Fans of CloudMagic for iOS will fawn over this "distraction-free" Mac app, even if it lacks a key feature of the mobile version.

BY OSCAR RAYMUNDO

It took less than two years for CloudMagic to garner 3 million users and the title of best overall email app (go.macworld. com/cloudmagic) for iOS. Now the CloudMagic team is hoping to translate that email magic to the Mac.

After almost nine months in development, CloudMagic for Mac is finally available in the Mac App Store (go. macworld.com/cloudmagicapp). The Mac version borrows successful elements from its iOS predecessor: a minimalist, lightweight design; intuitive actions; and what the company calls an "opinionated user experience," or clever quips to help you navigate your inbox.

While the CloudMagic app for iOS is free, CloudMagic for Mac is $20. It supports a wide range of email clients, including Gmail, Office 365, Yahoo Mail, Hotmail/Outlook, Exchange, iCloud, and IMAP. It also supports Handoff so you can effortlessly switch back and forth between checking email on your Mac, iPhone, iPad, and Apple Watch.

DISTRACTION-FREE INTERFACE FOR THOUGHTFUL EMAILS

The best part about CloudMagic for Mac is the "distraction-free" email composer. Hitting the Reply button brings up a new, clean window with a bold headline-sized subject line. It feels similar to composing a blog post on Tumblr or Medium. In fact, the CloudMagic team boasts (cloudmagic.com/k/mac) that it "didn't just design it for composing emails. It should inspire you to write anything, even poems." Whereas replying to emails on your iPhone requires being quick and straight-

forward, on our Macs we can afford to be more thoughtful. And Cloud-Magic for Mac seems to have been designed with that in mind.

Although the "distraction-free" mindset is much appreciated, it'd be nice if the CloudMagic Mac app gave us more options to customize the email reading experience. Sometimes you need the distractions to see the full picture. For example, being able to see the inbox on the left and an opened email on the right (like most email Mac apps) would save a lot of back-and-forth.
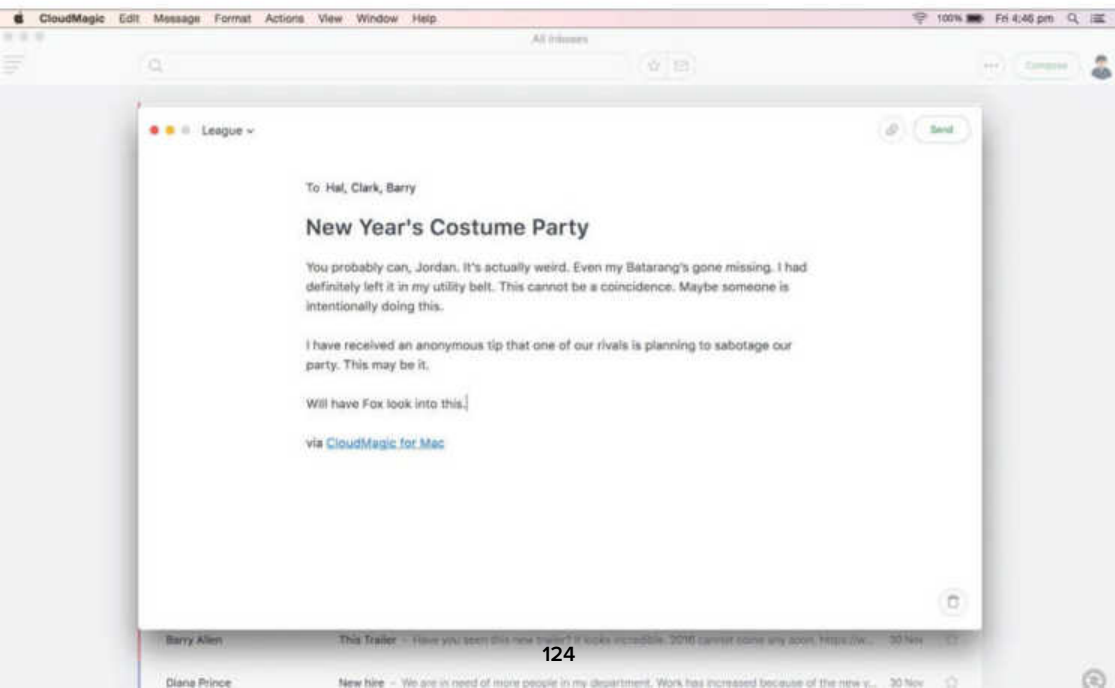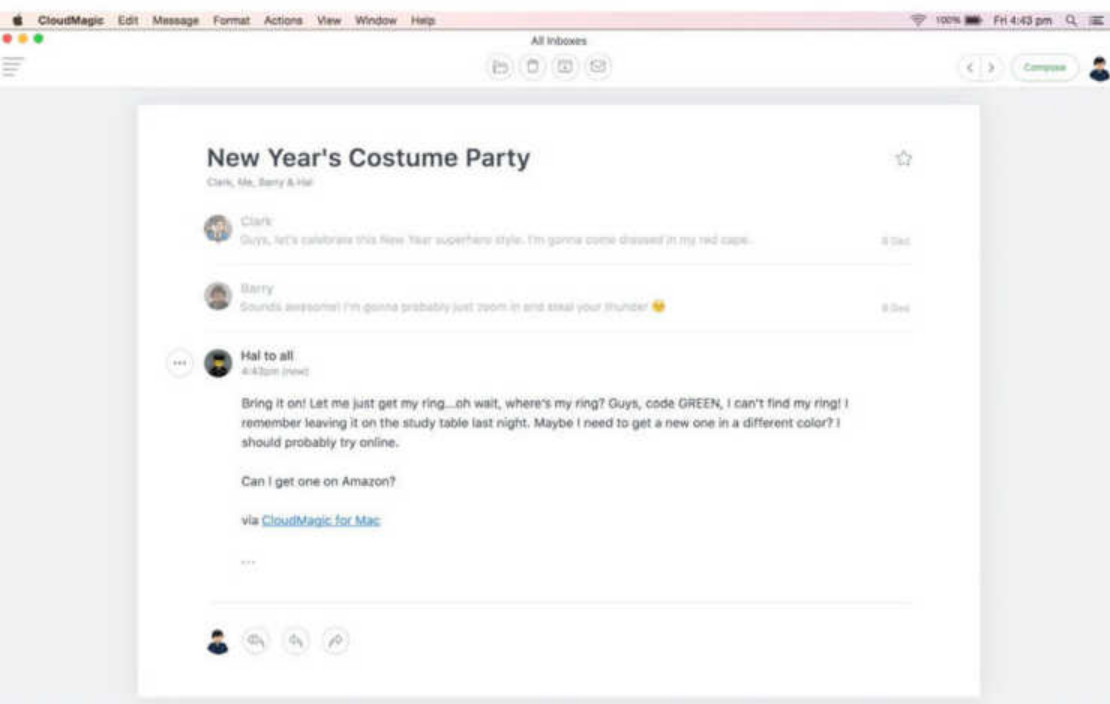
INTUITIVE QUICK ACTIONS FOR REACHING INBOX ZERO

The "distraction-free" experience is not to say that you will be inspired to write haikus all day instead of actually checking your email and shooting lighting-fast responses. CloudMagic for Mac has several intuitive actions that make getting through your inbox a breeze. For example, clicking anywhere on the gray area surrounding an opened email message brings you right back to your inbox. You can also select multiple emails for mass archival, deletion, or marking as read by clicking on an email's checkmark. Once the email thread gets high-lighted in blue, you can click any-where on any other email thread to also select it. And if you want to see just your starred emails or your unread emails, you can do that by clicking on the buttons at the top near the search bar.

Speaking of the search bar, CloudMagic for Mac has decent search capabilities, especially if you
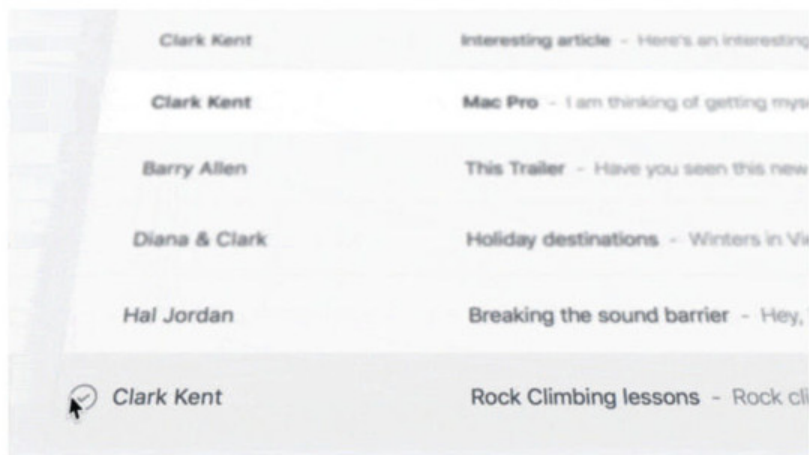
allow it to access your Contacts, which helps autocomplete email addresses. If you have more than one email account, let's say your personal Gmail and work Exchange, you sometimes have to designate which account you'd like to search for CloudMagic to surface more accurate results.

SMART APP INTEGRATIONS TO COME

The one key feature that is notably absent from CloudMagic for Mac is third-party app integrations. On Cloud-Magic for iOS you can activate smart

cards to integrate your emails with other popular productivity tools like Evernote, MailChimp, Pocket, Todoist, Salesforce, Asana, Trello, OneNote, and Zendesk. CloudMagic for iOS can also seamlessly save your emails to Dropbox, iCloud, Google Drive, and OneDrive—another missing component of the Mac app.

Productivity fiends, don't lose hope. The CloudMagic team told us that they'll be adding these types of integrations very soon. They also have plans to add more, never-before-seen business features to the Mac app. ■

" SURE, AT FIRST I WAS A LITTLE TAKEN ABACK BY THE WHOLE PEEING STANDING UP THING. BUT I TAUGHT HIM TO THROW A STICK AND NOW HANGING OUT WITH HIM IS THE BEST PART OF MY DAY. "

—EINSTEIN
adopted 12-09-10

A PERSON IS THE BEST THING TO HAPPEN TO A SHELTER PET

adopt

theshelterpetproject.org

Everything you need to know about digital audio files

Don't know the difference between lossy and lossless? What's the deal
with bit rates? Let us explain.

BY KIRK McELHEARN

Whether you use iTunes or buy and download digital music, you'll have come across a number of terms and abbreviations that describe digital audio files. This alphabet soup can be quite confusing. What are codecs or audio file formats? What is a bit rate, and what's a sample rate? What does it mean when music is "high-resolution"?

This article covers what you need to know about digital audio files. I'll tell you the difference between lossy and lossless files, I'll explain why bit rates matter (or don't), and I'll help you understand the various file formats you may encounter.

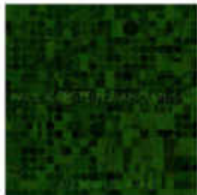## COMPRESSION: LOSSY AND LOSSLESS

When you buy a CD, the audio on the disc is uncompressed. You can rip (or import) CDs with iTunes or other software, turning the CD's audio into digital audio files to use on a computer or a portable device. In iTunes, you can rip in two uncompressed formats: WAV and AIFF (other software allows for other formats). Both formats simply encapsulate the PCM (pulse-code modulation) data stored on CDs so it can be read as audio files on a computer, and their bit rate (you'll learn what *bit rate* is soon) is 1,411 kbps.

WAV and AIFF files can be quite large. As such, digital audio files are

ITUNES CAN RIP or import audio files in these formats. Choose the one you want to use in iTunes → Preferences → General → Import Settings.
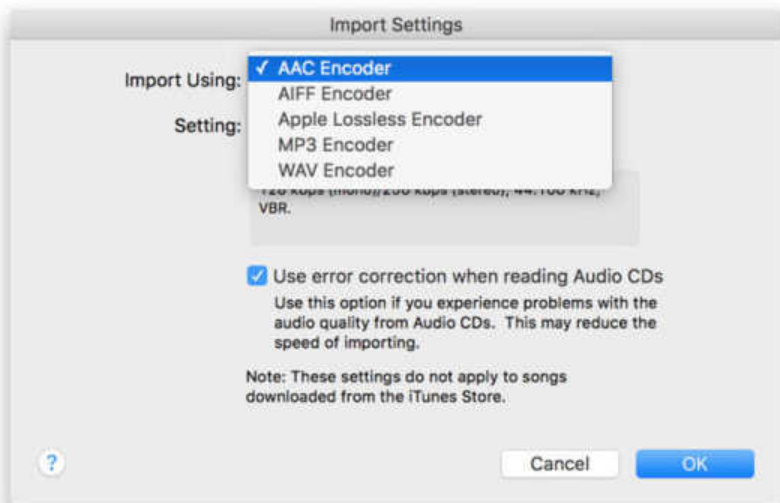
Album by Artist		✔ Name	Bit Rate	Artist
	1	✔ In Search of a Basilica	711 kbps	Ensemble of I…
	2	✔ Intersection (At 44th and 77th Streets)	682 kbps	Ensemble of I…
	3	✔ Junewalk	631 kbps	Ensemble of I…
	4	✔ Gas Lamps on Belgravia Court (Louisville, KY)	675 kbps	Ensemble of I…
	5	✔ Philadelphia Street (Indiana, PA)	552 kbps	Ensemble of I…
	6	✔ Perforated Axis	634 kbps	Ensemble of I…
	7	✔ New Year's Eve on Shelbyville Road (Another Fine Mess)	698 kbps	Ensemble of I…
	8	✔ Foggy, Foggy Dew	640 kbps	Ensemble of I…
	9	✔ This B is for Brian	810 kbps	Ensemble of I…
	10	✔ Trio and Sine Waves (with Wind, Snow, and Birds)	845 kbps	Ensemble of I…
	1	✔ Drawing No. 5 (Triangles)	459 kbps	Epstien, Paul
	2	✔ Drawing No. 3 (Slow Title)	408 kbps	Epstien, Paul
	3	✔ Drawing No. 4 (Triangles, Broken Horizontal and Vertic…	435 kbps	Epstien, Paul
	4	✔ Changes 6	353 kbps	Epstien, Paul
	5	✔ 72: 7/11/13	468 kbps	Epstien, Paul
	6	✔ Changes 3: Palindromes	469 kbps	Epstien, Paul
	7	✔ Landscape with Triads	356 kbps	Epstien, Paul
	8	✔ Drawing No. 6 (Horizontal and Vertical Broken Lines)	497 kbps	Epstien, Paul

compressed to save space. There are two types of compression: lossless and lossy. Lossless includes formats (or *codecs,* short for coder-decoder algorithms) such as Apple Lossless and FLAC (the Free Lossless Audio Codec). Lossy includes the ubiquitous MP3 and AAC formats. (AAC, which stands for Advanced Audio Coding, is, in reality, the MP4 format, the successor to the older MP3. While Apple adopted it early on in iTunes, Apple was not involved in its creation, and has no ownership of this format.)

You may see other audio formats too, though they are less common. These include Ogg Vorbis, Monkey's Audio, Shorten, and others. Some of these codecs are lossy, and some are lossless. However, if you use iTunes and Apple hardware, you'll only encounter WAV, AIFF, MP3, AAC, and Apple Lossless, at least for music.

When you rip or convert an uncompressed audio file to a lossless format, and then play that file, it is a bit-perfect copy of the original (assuming the data was read correctly from a CD). As such, you can convert from one lossless format to another with no loss of quality.

When you rip to a lossy format, however, if you convert the file later to another format, you lose some of its quality. This is similar to the way a

HERE ARE TWO albums I converted to Apple Lossless. You can see the bit rates vary from 353 kbps to 845 kbps. The first album is a chamber ensemble, and the second solo piano. The complexity and volume of the music affect the final bit rate needed for lossless compression.

photocopy of a photocopy doesn't look as good as the original.

Some people prefer lossless formats because they reproduce audio as it is on CDs. Lossy compression is a compromise, used to save space, allowing you to store more music on a portable device or hard disk, and making it faster to download. However, most people can't tell the difference between a CD and a lossy file at a high bit rate, so if you're ripping your music to sync to an iPhone, lossless files are overkill.

Lossless rips are a good way to make archival copies of your files, since you can convert them to other formats with no loss in quality. And you can have iTunes convert them automatically to AAC files when you sync. See go.macworld.com/autoconvert for more on this automatic conversion, as well as other questions about lossless files.

BIT RATES

The best way to judge the quality of an audio file—relative to its original, not to its musical or engineering quality—is to look at its bit rate. Audio file bit rates are measured in thousands of bits per second, or kbps. I mentioned above that a CD contains audio at 1,411 kbps, and when you convert that audio to a lossy file, its bit rate is much lower.

A higher bit rate is better, so a 256 kbps MP3 or AAC file is better than a 128 kbps file. However, with lossless files, this isn't true. The bit rate of a lossless file depends on the density and the volume of its music. Two tracks on the same album, ripped to a lossless format, may have bit rates of, say, 400 kbps and 900 kbps, yet when played back, they both reproduce the original audio from CD at the same level of quality. Lossless compression uses as many bits as needed, and no more.

If you're ripping music to a lossy format, it's good to choose the iTunes default of 256 kbps, unless you need to cram a lot of music onto your portable devices. If you're ripping audiobooks or other spoken word recordings, you can use much lower bit rates, since the range of the human voice is quite narrow. Audio-

iTUNES IS SHOWING information about a high-resolution audio file: You can see that the bit rate is much higher than for a standard lossless file. What iTunes calls the sample size is the bit depth.

kind	Apple Lossless audio file
duration	23:03
size	366.8 MB
bit rate	2,224 kbps
sample size	24 bit
sample rate	88.200 kHz

books are often ripped at 32 kbps, and they sound fine.

WHAT IS HIGH-RESOLUTION AUDIO?

High-resolution audio, once a niche format, has gotten a lot of press recently. Neil Young's beleaguered PonoPlayer (go.macworld.com/ponowoes) raised awareness of this type of digital audio. Strictly speaking, high-resolution audio is distributed in files that are "better" than CD quality. High-resolution audio is defined by certain numbers: the bit depth of files, and their sample rate.

CDs contain 16-bit audio at a sample rate of 44,100 Hz. So high-resolution audio has a bit depth and/or sample rate that exceeds that of the CD specification (known as the Red Book standard). Much high-resolution audio is 24-bit, 96 kHz, often abbreviated as 24/96. Some companies sell files at 24/192 and 24/384. And there are also several types of DSD (direct-stream digital) files, which use a different recording method. DSD is used on SACDs, or Super Audio CDs, a format designed by Sony and Philips that is pretty much deceased.

When we talk about bits in high-resolution audio, we're not looking at the bit rate, which I discussed above, but the bit depth. This is the number of bits in each sample, and it mostly affects dynamic range, which is the difference between the softest and loudest parts of the music. (Though, as you can see in the screenshot on the previous page, the actual bit rate of a high-resolution audio file is much higher than that of a CD or of a file ripped in a lossless format.)

A good example of music with a very broad dynamic range is Mahler's third symphony. Listen to the final movement, and you'll hear some very soft sounds as well as an extremely loud crescendo. Or listen to Led Zeppelin's "Stairway to Heaven"; it starts with a soft acoustic guitar and builds up to a fuzz-box finale.

A higher bit depth allows music to have a wider range of volume from its softest to loudest passages. But with a lot of contemporary music, the volume of the music is "compressed" to make it louder. (This is dynamic range compression, not the compression used to make files smaller.) So you don't hear much of a difference with that type of audio if the bit depth is higher.

The sample rate is the number of "slices" of audio that are made per

> **STRICTLY SPEAKING, HIGH-RESOLUTION AUDIO IS DISTRIBUTED IN FILES THAT ARE 'BETTER' THAN CD QUALITY.**

second, and are measured in Hz (Hertz). 44,100 Hz means that the music is sampled 44,100 times a second; 96 kHz means it is sampled 96,000 times a second. The sample rate affects the overall fidelity of music, but also the range of frequencies that can be reproduced. Files sampled at 44,100 Hz can reproduce up to about 20 KHz, or the highest frequencies that humans can hear. High-resolution files can reproduce sounds above that frequency, sounds that humans cannot hear at all. (And extremely high sample rates, such as 192 kHz, may even result in distorted sound.)

Better numbers don't mean that the music necessarily sounds better. To many people, high-resolution audio is simply a marketing ploy, a way of getting listeners to buy their favorite music in yet another format. It is conceivable that people with very expensive stereos in rooms treated to provide excellent sound may hear the difference, but those one percent of music listeners shouldn't sway others into buying music that doesn't sound any different. And when you're listening on a portable device, the quality of your headphones, and the ambient noise, ensure that you certainly won't hear anything different.

LISTENING TO MUSIC

All this makes it seem like listening to music should depend on numbers. But it shouldn't. Listen to the music you like, in the format that's most convenient, on the device you want to play it. It's great to have better headphones and speakers, but great music can cut through all the fancy hardware and move you no matter how you listen to it. ■

Turn a Mac mini into a media server with Plex

If you have a large media collection, you may want to use a Mac as a dedicated device to run Plex. And the Mac mini is that perfect device.

BY KIRK McELHEARN

With the arrival of the fourth-generation Apple TV, I found myself trying out the Plex (plex.tv) media server, and I realized that using Plex is one of the best ways to watch media on the Apple TV.

You can install the Plex server software on a variety of devices: your Mac, a PC, a NAS (network-attached storage) device, and more. (Heck, you could even set it up on a Raspberry Pi; go.macworld.com/raspberrypiplex.)

It's advantageous that Plex's server be always on, so you can start watching your movies and TV shows without having to boot your Mac. If you have a large media collection, you may want to use a Mac as a dedicated device to run Plex. The Mac mini is a perfect candidate for this. Plex doesn't need a lot of horsepower to manage and stream your media, unless it transcodes video. (If you do have a lot of videos that need transcoding, a NAS might not be a good fit for Plex; go.macworld.com/nasandplex.)

In this article, I'm going to tell you how you can set up a Mac mini as a dedicated Plex server. You can, of course, use that Mac mini for other things: for example, as a file server or for Time Machine backups.

THE MAC MINI

The Mac mini is the cheapest Mac you

can buy. Its small form factor and quiet operation make it easy to integrate into a home entertainment system or use as a server stashed away in a corner. The current model, starting at $499, includes Thunderbolt and USB 3 connections, and while it doesn't have the largest (or fastest) hard drive, its 500GB might be enough for your media collection. But the entry-level model with a 1.4GHz processor is a bit pokey. For $699, you get a Mac mini with a 2.6GHz processor and 1TB hard drive, which will handle most people's media collections.

You might not need to spend that much. I'm running a 2011 Mac mini that I tricked out with the fastest available processor when I bought it. The 2.7GHz Core i7 is fast enough to transcode video and handle several other tasks at the same time. I also bought the Mac mini with a 256GB SSD and a second internal drive of 750GB. It has a Thunderbolt port, but it does not have USB 3. You can
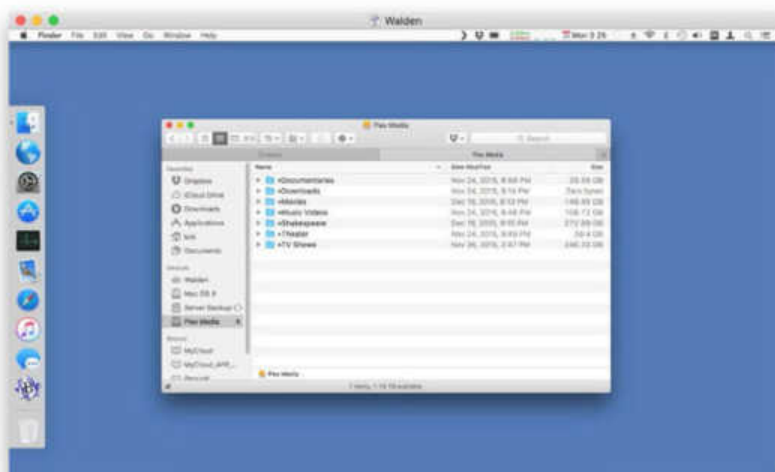
probably find a similar used model for a few hundred dollars.

STORAGE

I only use Plex for videos; movies and TV shows that I've ripped from DVD or Blu-Ray. (Remember, Plex cannot play any DRM-protected videos purchased from the iTunes Store or elsewhere.) My music library, as well as my iTunes Store movies and TV series, are stored on my iMac, but I've shunted the rest of my videos to the Mac mini.

You need to plan ahead as far as storage is concerned. If you buy a current build-to-order Mac mini, you can get a 2TB drive in the most expensive model, but that would cost you $1100. It's cheaper to get a less expensive Mac mini and use external

hard drives. You should have one for your media, and another to back up the first drive (and the operating system—you can use Time Machine so this runs automatically).

You can buy a 4TB external USB 3 drive for about $120. For around the same price, you can get a 3TB USB 3 WD My Passport portable hard drive (or a 2TB model for less than $100). These drives are compact, and only need to be plugged into a USB port; no power cables are needed. With these portable hard drives, it's a lot easier to transfer lots of data from another Mac; instead of transferring files over your Wi-Fi network, you can plug one of the drives into another Mac to copy movies you've ripped.

No matter what, make sure that

you have a second drive to back up your movies, unless you're keeping copies on another computer.

MANAGING A HEADLESS MAC MINI

My Mac mini runs OS X Server ($20, or free with a paid Apple developer account), which allows me to use it for such things as caching software updates, and storing Time Machine backups of other Macs. You may not need this; the standard version of OS X is just fine.

When you initially set up the Mac mini, you need a display, keyboard, and mouse, but you'll be setting it up so that you won't need these items later. Go into the Mac mini's System Preferences and open the Sharing pane. In the left column, check the box for Remote Management. This will turn on Remote Management so you can manage the Mac mini from any other Mac on the network. In the Allow Access For window, you can specify which users can have remote access, or you can select All Users. Click the Options button and check the boxes for Observe and Control.

After you configure the Sharing settings, the Mac mini doesn't need a display; you can manage it remotely from any Mac. Just find it in the Shared section of the Finder window sidebar, and click Share Screen to start screen sharing. You can point, click, and type in the Screen Sharing window, just as you would on a normal display.

YOU ACCESS PLEX'S settings in a web browser. Here, I'm creating a new library.
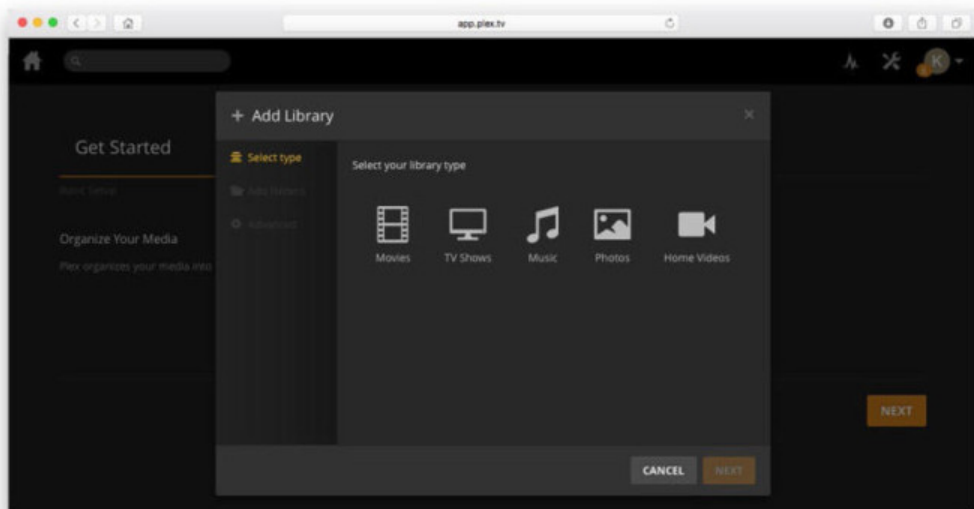
I'd recommend getting a video display emulator, or the $3 Resolutionator (manytricks.com/resolutionator), so you can switch resolutions, making it easier to work with the device. Since you'll need to access the Mac mini in this way from time to time, create a screen sharing alias (go.macworld.com/screensharingalias).

GETTING STARTED WITH PLEX
Once you've got your Mac mini set up, you need to download and install Plex, and read the Quick Start guide (go.macworld.com/plexquickstart) to get things up and running. On your Apple TV—and on any iOS devices you want to use—you also need to install the Plex app to be able to interact with the server. Read go.macworld.com/plexnaming to learn how to name your files, so Plex can find metadata efficiently, and then copy your movies and TV series to the Mac mini, or to its external hard drive. Then create one or more libraries in Plex's settings, which you access in your web browser.

Your Mac mini with Plex can not only serve videos to your home entertainment system—or to other devices in your house—but if you buy a Plex Pass ($5 a month, $40 a year, or $150 for a lifetime subscription) you get early access to new Plex features, Mobile Sync, Cloud Sync, Camera Upload and a lot more. (It can also manage music, of course; I don't discuss that here.)

While it may sound daunting to set up a media server, with a simple Mac mini, Plex, and a couple of hard drives, you can do so quickly and easily. The Mac mini is a low-power, quiet device, which you could put just about anywhere in your home, as long as it has access to your Wi-Fi network. Just get the Plex app for your Apple TV—or iPad, PlayStation, Roku, Amazon Fire TV, Xbox, or many smart TVs—and you'll be able to easily watch all your videos (that don't have DRM). ◼

Ask the iTunes Guy: iCloud Music Library, unwanted downloads, and more

Answers your questions about Apple media app.

BY KIRK McELHEARN
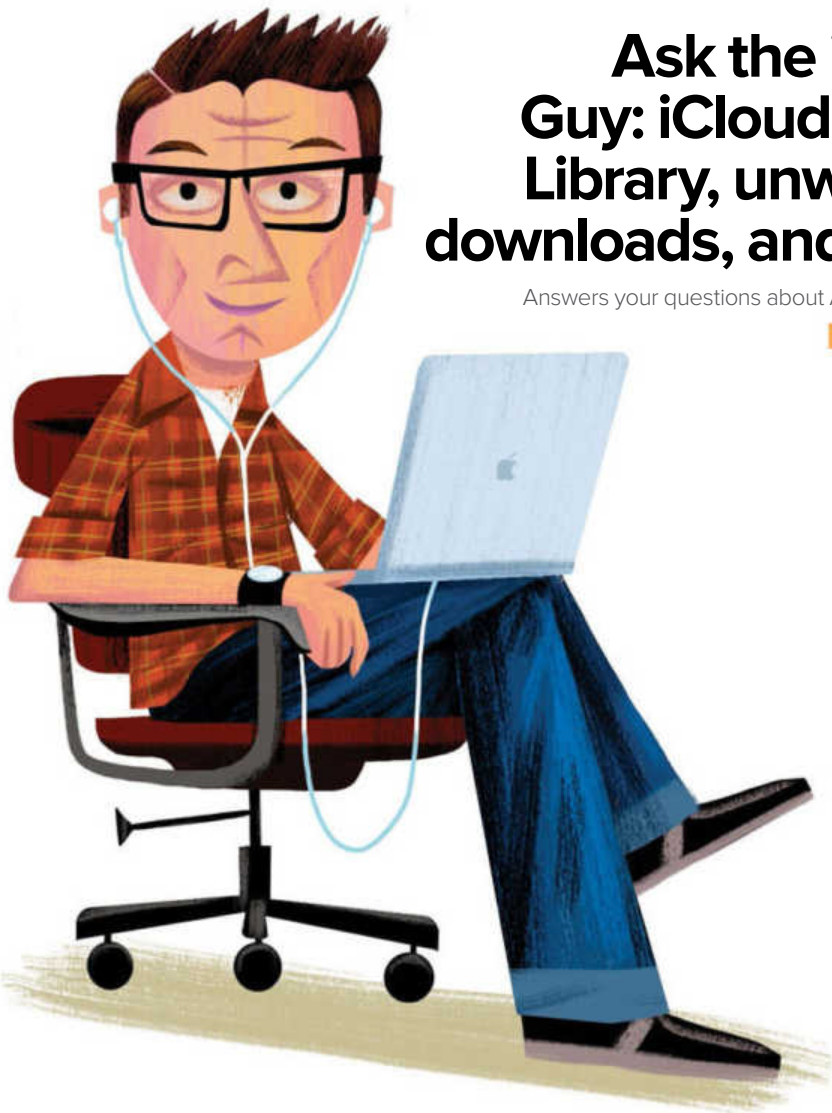
The months following the turn of a new year means that I get more and more questions regarding iTunes problems, as lots of people are sorting out their new iPhones, iPads, and iPods. In this month's column, I look at an issue with iCloud Music Library and unwanted downloads to iOS devices. I explain what happens when an Apple Music subscription ends. I tell you how to see play counts in your playlists. And more.

Too many downloads

Q: I'm an iTunes Match subscriber, and I've recently noticed that every time I add new music to my iTunes library, it downloads to my iPhone. I do want all my music to appear on all my devices ready for streaming from iCloud Music Library, however I don't want it to be automatically downloaded to the devices. Is there any way to turn this off?

A: Interestingly, just after I noticed this behavior on my iPad and iPad touch, I received several emails from users who were wondering why this was happening. I've written this up extensively on my website (go.macworld. com/icloudautodl), but here's the skinny on what's happening.

For some reason, apparently since the release of iOS 9.2, iOS devices that use iCloud Music Library now download every new track you add to your iTunes library. Tracks added from Apple Music don't download,

only those you physically add to the library (by adding files downloaded from sources other than iTunes, or ripped from CD).

This is problematic for several reasons. First, it uses a lot of bandwidth. Recently, I found that my two iOS devices each downloaded about 4GB of music that I had added to my

HERE'S MY iPOD touch downloading the latest album I added to my iTunes library.
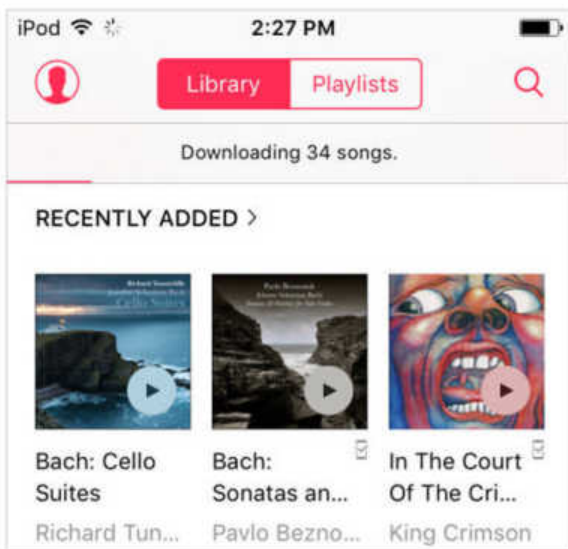
✓	Name	Plays ⌄	Last Played
☑	Trouble No More (Live At the Fillmore East)	3	12/17/15, 11:57
☑	It's Alright, Ma (I'm Only Bleeding)	3	12/8/15, 12:09
☑	44 Harmonies from Apartment House - 1776: Harmony V: The Lor...	3	1/2/16, 16:32
☑	44 Harmonies from Apartment House - 1776: Harmony X: Is There...	3	1/2/16, 16:42
☑	In Memory of Elizabeth Reed (Final Fillmore East Concert)	2	12/22/15, 15:00
☑	Just Like a Woman	2	12/23/15, 17:20
☑	Sonata V	2	1/2/16, 15:14
☑	Sonata XI	2	1/2/16, 15:32

iTunes library. Second, if you haven't turned off cellular downloads for the Music app (in Settings ➜ Cellular), because you may occasionally want to download a song or an album when you're using your iPhone, you may find that you've burned through your monthly data cap. Some users are already reporting high charges from their phone companies for exceeding their data caps by downloading several gigabytes of music files. (And you may have a data cap on your home Internet too; in my case, the two devices downloaded 8GB.) Finally, it's conceivable that your iPhone will fill up quickly if you add a lot of new music to your iTunes library.

I've found that if I add new music to my iTunes library, it downloads to my devices. But if I delete that music on the iOS devices—go to Settings ➜ General ➜ Storage & iCloud Usage ➜

Music, and then swipe each artist name to delete their music—it doesn't re-download to the device. Nevertheless, I shouldn't have to do this. This is clearly a bug, and I hope Apple fixes it quickly, because it is an annoyance, and it's costing many users a lot of money.

What happens when it's over?

Q: If I add songs from Apple Music to my iPhone, when my subscription is up, will these songs disappear, or will I be forced to pay for them?

A: Those tracks will disappear; you won't be billed for them. You may get a reminder that you can resubscribe to Apple Music; the service is too new to know how aggressive Apple will be in trying to bring former users back into the fold.

VIEW PLAY COUNTS IN your playlists.

Playlist length

Q: Since updating to iOS 9.2, I no longer see the total playlist length in the Music app on my iPhone. This is a huge loss for me since I rely on that feature as a fitness instructor. Is there a solution other than using a calculator?

A: Alas, no. However, if you create playlists in iTunes, you can name them accordingly. For example: Playlist 1 to 30 min, Playlist 2 to 15 min, etc. It's cumbersome, but it's the only workaround I can think of.

Where are my play counts?

Q: In iTunes 12.3.2 my play counts no longer display. I know they are available when I select a track and press Command-I, but I want to see the play counts in lists. There's no customization of the information in playlists anymore. Is there anything I can do to restore it?

A: It sounds like you're using Playlist view, which only shows limited information about the tracks in your playlists. You want to switch your playlists back to Songs view. I cover the different iTunes views in go. macworld.com/itunesviews

When you're in Songs view, you can add columns from the View Options menu (press Command-J), or by right-clicking any column header, and selecting one of the columns in the contextual menu. ∎

Ask the iTunes Guy

Have questions of your own for the iTunes Guy? Send them along for his consideration to itunesguy@macworld.com.

Mac 911

Solutions to your most vexing Mac problems.

BY GLENN FLEISHMAN

How to avoid a surprising bill due to Wi-Fi Assist

Christina Farr, a health and technology senior writer at Fast Company, had
an unexpected bit of coal in her end-of-year stocking: A bill for cell data
overage charges. But, she noted on Twitter, she takes care in staying on
Wi-Fi and not using the cellular network. Most of her usage was at home
or at Starbucks.

The culprit? Wi-Fi Assist. This feature added in iOS 9 is intended to make your Internet experience more consistent. When you're on a Wi-Fi network that has erratic service, such as Internet connection dropouts, Wi-Fi Assist uses the cellular network as a secondary data source.

Apple notes on its site that Wi-Fi Assist has a lot of options to prevent excessive data use. It only engages for foreground apps, not background tasks; it doesn't kick in for third-party audio and video streaming apps; and email attachments aren't automatically downloaded.

But clearly, in the right circumstances, you can burn hundreds of megabytes to gigabytes, as Christina did. While many cellular plans include multiple gigabytes or even (with T-Mobile or grandfathered AT&T) unlimited-then-throttled or truly or effectively unlimited service, several carriers have less-expensive low-usage plans.

I'd recommend most people disable Wi-Fi Assist, which Apple turns on in iOS 9 by default. Go to Settings → Cellular, and scroll way, way, way down to the bottom to find Wi-Fi Assist, and tap it off.

If you find that your iPhone or cellular-enabled iPad has connection problems on Wi-Fi networks after disabling it, you can turn it back on or
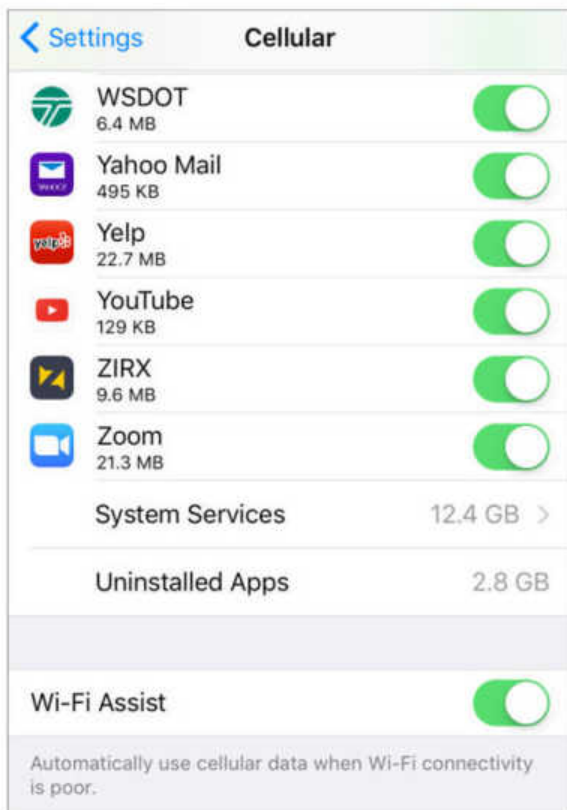
intentionally switch to a cellular network. Either:

1. Disable Wi-Fi by swiping up from the bottom to get to the Control Center and tap the Wi-Fi icon to disable it, or use Settings → Wi-Fi to tap Wi-Fi to the Off position. (Some location and other features may not work or may work poorly with Wi-Fi disabled.)

WI-FI ASSIST IS tucked away at the bottom of what can be a very long list of apps in Settings → Cellular.

2. "Forget" the problematic Wi-Fi network by going to Settings → Wi-Fi, tapping the tiny info *i* icon to the right of the currently connected network, then tapping Forget This Network and confirming that choice. That will remove the network information (and delete its password on your device and across all iCloud Keychain synced OS X and iOS devices, too).

And if your home Wi-Fi network or that of a café you frequent is having such Wi-Fi problems that Wi-Fi Assist engages a lot, fixing the network or letting the café's owners know about the problem may be a better long-term solution.

How to navigate among tabs in Safari for El Capitan

Q: **I keep a lot of tabs open in Safari, and could move quickly among them in Yosemite using Command-Shift-right or left arrow. The new shortcut accommodates only nine tabs. Is there a way I can restore this functionality?**

— Leslie Rosenbaum

A: There are several things going on with tab navigation and shortcuts in Safari, both in El Capitan and before, and it's probably worth reviewing them all, as each has advantages.
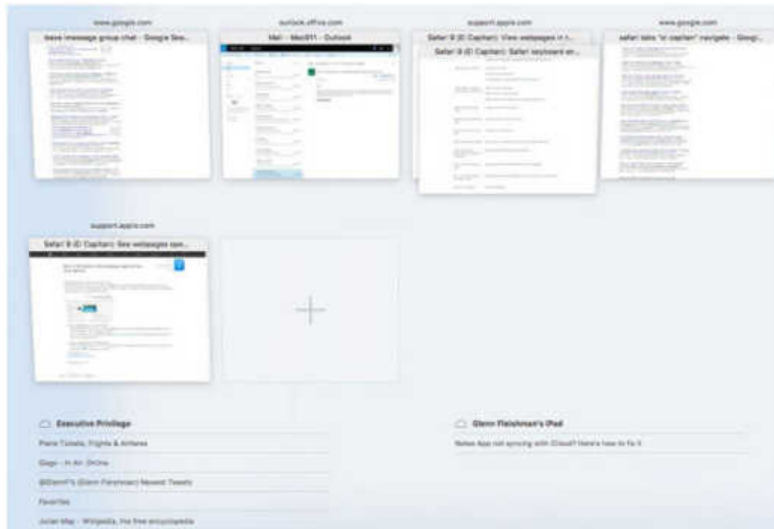
SHOW ALL TABS lets you see everything open, grouped in part by adjacent tabs from the same domain, and, optionally, any tabs open on other devices logged in to the same iCloud account.

The pre-El Capitan option to use Command-1 through Command-9 for favorited bookmarks remains—it just shifted to Command-Option plus a number. The Command key by itself plus a number moves among the first nine tabs open.

You can use Control-Tab or Command-Shift-] (to move from left to right among open tabs, one at a time, and Control-Shift-Tab or Command-Shift-[to move from right to left. This includes pinned tabs, a new feature in El Capitan.

Press Command-Shift-\ to trigger Show All Tabs (or click the button that's by default in the upper right corner of the Safari window) to review all open tabs, which are grouped by sites for adjacent tabs that have the same domain (like docs.google.com). Press the keystroke, click the button, or press the Escape key to exit the Show All Tabs view.

Show All Tabs can be slightly more useful, too, if you enable Safari in the iCloud system preference pane and in Settings ➡ iCloud on two or more of your devices logged in to the same iCloud account. Then, Show All Tabs will reveal all tabs open not just on your Mac, but also on other devices down at the bottom of the scrolling window. This isn't part of Handoff, but a separate feature, and useful in a different fashion.

How to get a Mac laptop's headphone jack to work reliably

Q: My Retina MacBook Pro has recently stopped detecting headphones properly when they are plugged in. It will act as if nothing is connected and just continue using the speakers. Restarting will cause it to work again, but only until I close it. The problem will then return.

— Jeremy Saklad

A: There can be several causes to this problem, but you can isolate the easy one first: Get a can of compressed air or an air compressor designed for use with computers. Put the laptop on a level surface, and briefly spray air into the headphone jack. (Never spray canned compressed air except with the can perfectly level; otherwise, it can leak compressed liquid and damage.)

Does this problem go away? Good! There was just dirt or debris in the hole. This is also a common problem with iOS devices.

If that doesn't solve it, try these steps whenever this occurs:

Does plugging and unplugging the headphones make them work?

Hold down the Option key, and select the volume icon in the system menu bar to reveal audio inputs and

outputs. Is Headphones selected as the output device? Does it appear in the list? If so, can you re-select it and get sound through the headphones now?

Sleep and wake your computer. Do the headphones work now?

If any of those three options work, and it doesn't permanently fix the problem, go through our instructions for zapping NVRAM (non-volatile memory), in which certain system hardware settings are cached, and can corrupt. You may even need to try to reset the SMC (System Management Controller), also described in that link. (Jeremy tried resetting NVRAM to no avail.)

After trying all this, if you keep having failures or intermittent performance, it's possible the jack's wiring is damaged or internal circuitry has gone kaput. Take it to Apple if it remains under its regular warranty or the extended three-year AppleCare warranty, as such a failure should be covered (unless you jammed something untoward in the hole at some point).

If it's out of warranty, Apple will likely want to replace the entire main logic board, which can be very expensive. You might look for a trusted local Mac repair outfit that could diagnose and replace just a component. You can also replace its functionality with a USB audio adapter; there are many on the market that are compatible with Macs, require no driver installation, are well-reviewed, and cost $10 or less. (Note that Apple earbuds and similar devices that bundle mic and headphones into a single plug won't work with most of these, though they almost all have a separate mic-in jack.) ■

Ask Mac 911

We're always looking for problems to solve! Email us at mac911@ macworld.com, tweet them at me (if brief) @glennf, or call 206-337-5833 and leave a voicemail message. (We'll be experimenting with some audio in the future, and may put your question "on the air.")

Mac 911 can't provide direct email responses or answers for every question. For that, turn to Apple-Care, an Apple Store Genius Bar, or the Apple Support Communities.